DOCUMENT RESUME

ED 461 119 CS 217 785

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TITLE Questions in Time: Investigating the Structure and Dynamics of Unfolding Classroom Discourse. CELA Research Report.

INSTITUTION National Research Center on English Learning and Achievement, Albany, NY.

SPONS AGENCY Office of Educational Research and Improvement (ED), Washington, DC.

REPORT NO CELA-RR-14005

PUB DATE 2001-01-00

NOTE 59p.

CONTRACT R305A960005

AVAILABLE FROM National Research Center on English Learning and Achievement, University at Albany, State University of New York, 1400 Washington Avenue, Albany, NY 12222. For full text: http://cela.albany.edu/nystrand01-5/index.html.

PUB TYPE Reports - Research (143)

EDRS PRICE MF01/PC03 Plus Postage.

DESCRIPTORS *Classroom Communication; *Classroom Environment; Classroom Research; Discourse Analysis; *Discourse Communities; Grade 8; Grade 9; Models; Naturalistic Observation; Secondary Education; *Student Role; *Teacher Role

IDENTIFIERS Discourse; Variables

ABSTRACT

In research on classroom discourses, case studies have been used to describe the dynamics of effective and ineffective instruction. In other research, quantitative studies have identified global features of such discourse. The research reported here combined the advantages of both methods, investigating how generally effective classroom discourse unfolds. Research built on the findings of previous research, that classroom discourse tends to promote student achievement when it actively involves them in the production of knowledge and when the discourse is highly interactive. The study used data collected by two of the principal investigators in 872 observations of more than 200 eighth- and ninth-grade English and social studies classes in a wide variety of midwestern schools. All class sessions were taped, and all teacher and student questions were coded for a variety of variables. Key findings show dialogic spells are: infrequent; nearly twice as frequent in social studies as in English; twice as frequent in eighth grade as in ninth; and virtually nonexistent in low-track classes. The study finds that authentic questions, uptake, and especially student questions all serve as dialogic bids, and that their effect is cumulative over the course of individual instructional episodes. Of the variables investigated, student questions had the strongest positive effect for spurring both dialogic spells and discussion, though students in low-track classrooms virtually never asked questions. Discussion is significantly predicted by uptake, student questions, and high cognitive-level teacher questions, though the latter tends to suppress student questions. (Contains 38 references. Includes 22 notes, 10 tables, and 6 figures. A model for dialogic shifts is appended.) (Author/NKA)

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ED 461 119

CELA RESEARCH REPORT

QUESTIONS IN TIME: INVESTIGATING THE STRUCTURE AND DYNAMICS OF UNFOLDING CLASSROOM DISCOURSE

MARTIN NYSTRAND, LAWRENCE L. WU, ADAM GAMORAN, SUSIE ZEISER, & DANIEL LONG

CELA RESEARCH REPORT NUMBER 14005

NATIONAL RESEARCH CENTER ON

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Report Series 14005
http://cela.albany.edu/nystrand01-5/index.html
2001

ACKNOWLEDGMENTS

The authors would like to thank James Fehrenbacher for programming, Thomas Pedroni for assistance with transcription, and Arthur Applebee, David Bloome, Samantha Caughlan, Cecilia Ford, George Hillocks, Douglas Maynard, and Gordon Wells for helpful feedback.

PUBLISHING INFORMATION

National Research Center on English Learning & Achievement
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1400 Washington Avenue, Albany, NY 12222
http://cela.albany.edu/
518-442-5026

The Center on English Learning & Achievement (CELA) is a national research and development center located at the University at Albany, State University of New York, in collaboration with the University of Wisconsin-Madison.

The Center, established in 1987, initially focused on the teaching and learning of literature. In March 1996, the Center expanded its focus to include the teaching and learning of English, both as a subject in its own right and as it is learned in other content areas. CELA's work is sponsored by the Office of Educational Research and Improvement (OERI), U.S. Department of Education, as part of the National Institute on Student Achievement, Curriculum, and Assessment.

This report is based on research supported in part under the Research and Development Centers Program (award number R305A960005) as administered by OERI. However, the contents do not necessarily represent the positions or policies of the Department of Education, OERI, or the Institute on Student Achievement. All Center reports are peer reviewed before publication.

2001/11 – 14005

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Questions In Time: Investigating the Structure and Dynamics of Unfolding Classroom Discourse

Martin Nystrand, Lawrence L. Wu, Adam Gamoran, Susie Zeiser, & Daniel Long

Abstract

In research on classroom discourses, case studies have been used to describe the dynamics of effective and ineffective instruction. In other research, quantitative studies have identified global features of such discourse. The research reported here combined the advantages of both methods, investigating how generally effective classroom discourse unfolds. The study built on the findings of the authors' previous research, as well as that of other researchers, that classroom discourse tends to promote student achievement when it actively involves them in the production of knowledge and when the discourse is highly interactive. Working from a Bakhtinian framework, they define these pedagogically rich sequences as "dialogic spells" and discussion, and investigate the effects of two general categories of factors: (a) ***static variables*** *(SES, gender, race, ethnicity, class size, and both teacher and school characteristics, as well as prior student achievement) and (b)* ***dynamic variables*** *(the onset and sequencing of student questions, authentic questions, high-level evaluation, uptake, and high-cognitive level questions) as both static and dynamic variables affected dialogic shifts and discussion.*

The study used data collected by two of the principal investigators in 872 observations of more than 200 eighth- and ninth-grade English and Social Studies classes in a wide variety of schools in the Midwest. Each class was observed four times over the course of the academic year. All class sessions were taped, and all teacher and student questions (more than 33,904) were coded for a variety of variables. For students in each of these classes, data were collected concerning background information on ability group, prior achievement, socioeconomic status, race, and ethnicity.

Key findings show dialogic spells are (a) infrequent – less than 7% of 1,151 instructional episodes in eighth- and ninth-grade English and Social Studies classes had even one dialogic spell; (b) nearly twice as frequent in Social Studies (8.61%) as in English 4.81%; (c) twice as frequent in eighth grade (9.55%) as in ninth (4.39%); and (d) virtually nonexistent in low-track classes: 1.02% vs. 7.47% in high-track and 5.35% in regular classes. The study finds that authentic questions, uptake, and especially student questions all serve as dialogic bids, and that their effect is cumulative over the course of individual instructional episodes.

Of all the variables investigated, student questions had the strongest positive effect for spurring both dialogic spells and discussion, though students in low-track classes virtually never asked questions.

Discussion is significantly predicted by uptake, student questions, and high-cognitive level teacher questions, though the latter, it is found, tend to suppress student questions.

Previous research showed that even though uptake and authentic teacher questions occur in low-track classes about as frequently as in their high-track counterparts, they have significantly greater effects in the high-track classes; the study reported here accounts for the difference by finding that authentic questions and uptake are clustered in the high track classes whereas they occur more randomly in the low-track classes. This study shows that student-teacher interaction – indeed even individual teacher questions – have clear roots in previous interactions, as well as consequences for subsequent ones.

Event history analysis is a powerful tool for investigating how classroom discourse unfolds and holds great potential for helping instructors gain informed control over how they interact with students and how they might create instructional settings that both engage students and foster learning.

QUESTIONS IN TIME:
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INTRODUCTION

Years of quantitative research in the sociology of education have tended to obscure the fact that education is fundamentally a process of human interaction. Survey researchers have traditionally approached the study of schools and students by focusing on the categories to which students belong (schools, grades, tracks, classes) and the resources to which they have access (funding, classmates, teachers, etc.), but rarely have these quantitative studies measured the *quality* of students' experiences. At best, researchers who have used quantitative measures to summarize students' classroom experiences have aggregated such experiences over a large block of time, generally a school year (e.g., Barr & Dreeben, 1983; Nystrand, 1997). Yet because classroom instructional events invariably change from lesson to lesson – indeed, even minute to minute – these measures are likely to obscure important aspects of students' experience of schooling. Instruction is inadequately characterized by broad averages, and considerable sociological research on classrooms has missed this nuance.

If education is a process of interaction, then it follows that classroom discourse constitutes the mechanism through which interaction takes place. Most studies of classroom discourse examine a small number of cases, or even a single case, in fine-grained detail (see Cazden, 1988). These studies illuminate the process of interaction, but they cannot address some questions of central interest to sociologists and education researchers, including (a) how discourse unfolds differently among many different types of classrooms; (b) what types of classrooms play host to discourse that promotes student learning; (c) how classroom discourse unfolds over time, in directions of higher or lower quality. Small-scale studies cannot answer these questions either, because they do

not examine samples that are large or diverse enough to uncover important patterns across classes and thereby draw any conclusions about instruction generally. Nor can survey studies address these issues, because they do not examine evidence on classroom discourse in a sufficiently fine-grained way.

In this paper, we bridge the gap between the parsimony of quantitative analyses and the complexities of classroom interaction with a detailed empirical analysis of the dynamics of classroom discourse in a wide range of classrooms and instructional episodes. Statistically, we use event history methods that permit us to examine instruction as it unfolds over time, instead of estimating associations among yearly averages. Theoretically, we offer a reconceptualization of the classroom learning environment that draws on Russian scholar Mikhail Bakhtin's (e.g., 1984) epistemological distinctions between "monologic" and "dialogic" discourse. Following Bakhtin, we view classroom discourse as monologic to the extent that the main speaker, typically the teacher, operates from a predetermined "script"; as Bakhtin (1984) puts it, "monologism . . . pretends to *possess a ready-made truth*" (p. 110; emphasis in translation). By contrast, classroom discourse is "dialogic" to the extent that the participants expand or modify the contributions of the others as one voice "refracts" another. We use these theoretical arguments to motivate a number of empirical questions that we view as critical to a sociological inquiry into classroom learning: What forms of discourse would be expected, on theoretical and empirical grounds, to promote student learning? What types of classrooms play host to discourse that is of high quality? How might one identify when the learning environment is dominated by monologic discourse and when it is dominated by dialogic discourse? How does the pattern of classroom discourse – monologic and dialogic – unfold over the classroom period? Do these patterns of unfolding discourse vary systematically across classrooms? And what aspects of teacher/student interactions might move discourse in directions of higher or lower quality?

Before beginning our analysis, we elaborate a conception of classroom discourse focusing on its structure and dynamics. We identify distinctive features of discourse occurring in classrooms as contrasted with other settings and contrast notions of monologic and dialogic discourse so as to explain the importance for educational research of studying classroom discourse as it unfolds over time.

Towards a Dynamic Conception of Classroom Discourse

Like other kinds of conversation, classroom discourse is shaped by structures of participation and relationships of authority (Schultz, Erickson, & Florio, 1982) that reflect the character of reciprocity, whether procedural or substantive, or some combination of the two, between the conversants (Nystrand, 1986). Unlike conventional conversation, whole-class discourse typically models a participation structure predictably controlled by a single conversant, the teacher. Teachers ask most of the questions and typically maintain the right to call on students and allocate turns, "in essence organizing and orchestrating the discussions" (Greenleaf & Freedman, 1998, p. 466). As such, the character of classroom discourse shapes the learning context in important ways.

Bakhtin (1984) deplored the typical asymmetrical organization of what he called "pedagogical dialogue" as a nonproductive monologism:

> In an environment of . . . monologism, the genuine interaction of consciousness is impossible, and thus genuine dialogue is impossible as well. In essence idealism knows only a single mode of cognitive interaction among consciousness: someone who knows and possesses the truth instructs someone who is ignorant of it and in error; that is, it is the interaction of a teacher and a pupil, which, it follows, can only be a pedagogical dialogue (p. 81).

For Bakhtin, this was a pathological form of discourse akin to a communication disorder. In its most radical form, monologic discourse, which he also referred to as "official discourse," resists communication: Everyone is compelled to speak the same language, and outer speech is all, seeking to drain the first person pronoun of all its particularity (Holquist, 1990, p. 52). "Monologism, at its extreme," Bakhtin (1984) writes:

> denies the existence outside itself of another consciousness with equal rights and responsibilities. . . . Monologue is finalized and deaf to the other's response, does not expect it and does not acknowledge in it any *decisive* force. . . . Monologue pretends to be the *ultimate word* (pp. 292-93; emphasis in original).[1]

From this perspective, the recitation taking place in typical school settings seeks to elicit "official" answers originating in texts and transmitted only one way – from teachers to students, to be received and recalled intact by students. The resulting monologic discourse, an activity Prawat (1995) calls "head-fitting," is one in which the relationship of teacher and student is restricted to that of evaluator and novice, organized for the transmission of information. This

relationship forms the basis of a discourse environment in which students have little chance of becoming conversants of consequence, recognized as contributing, producing, or participating actively in the construction of knowledge.

For Bakhtin, the resulting learning environment inverted the natural logic of inquiry in the sense that the utterances and interrogatives of normal discourse are dialogic: They not only respond to previous utterances but also anticipate a response (Bakhtin, 1986). Learning situated in the give and take of dialogic discourse is thus premised not on the recitation of recalled information, but rather on a dynamic transformation of understandings through interaction. In an ideal dialogic learning environment, especially in open discussion as opposed to recitation, teachers treat students as potential sources of knowledge and opinion, and in so doing complicate expert-novice hierarchies. By contrast, recitation within typical classrooms is overwhelmingly monologic precisely because the teachers routinely violate these prescripts. Discourse in the typical classroom does not proceed with teachers responding in dialogic fashion to previous answers or to student remarks. To the contrary, recitation is typically shaped by those points of information the teacher wants to cover. Consequently, teachers change topics at will, and teacher "uptake" of student questions is often perfunctory (Nystrand & Gamoran, 1991b). As a result, the "language of schooling" (Kutz, 1997) undertakes

> the acquisition of new discourses and expanding frames of references . . . ironically, not through continuing and evolving discourse, not through kicking ideas around and discussing in depth, or repeated familiarization with them through continuing, sustained, or coherent discussions about subtleties of and alternatives to these ideas . . . but through the memorization of decontextualized information bites whose fixed and unevolving meaning resides within that information. (p. 201)

Lotman (1988, 1990) claims that all language can be treated both dialogically and "univocally." When utterances are treated univocally, as in recitation, focus is on the "accurate transmission of information"; when they are treated dialogically, as in discussion, they are used as "thinking devices." From this perspective, whereas monologic discourse is useful for establishing topics and conveying information, it is dialogic discourse that opens the floor to discussion and the negotiation of ideas and new understandings. Translated to the classroom setting, this suggests, we argue, that the appropriate analytical level at which to engage these ideas involves discourse dynamics – that is, the evolving nature of the classroom instructional setting, where, for example, a teacher might first cover basic material, and then after establishing a topic for discussion, move classroom discourse on to a more probing and interpretive level, in which

student participation is elicited and encouraged. Thus even if monologic discourse dominates classroom instruction, it is likely that when dialogic discourse emerges, student engagement and learning will be enhanced (Nystrand, 1997). In such classrooms, dialogic discourse is a strategic device teachers can use to foster student engagement and construct a classroom environment conducive to learning.

These considerations intersect with a large body of empirical work over the last century that has documented the preponderance of recitation in American classrooms: Stevens (1912); Colvin (1919); Miller (1922); Thayer (1928); Corey (1940); Bellack (1966); Duffy (1981); Durkin (1978-79); Hoetker (1967); Hoetker and Ahlbrand (1969); Goodlad (1984); Mehan (1979); Sarason (1983); and Tharp and Gallimore (1988). Nystrand and colleagues found that the vast proportion of questions in a large, diverse sample of eighth- and ninth-grade English classrooms are indeed asked by the teacher in recitation, with whole-class discussion averaging less than 50 seconds per lesson in the eighth grade and less than 15 seconds in the ninth grade. The resulting classroom discourse involved highly codified test questions, which developed little more than procedural (IRE[2]) reciprocity; moreover, coherence from topic to topic was typically weak or absent. In all classes, the most common purpose of classroom discourse was to recall and display bits of information, to report on what was already known. Despite the preponderance of monologic discourse, Nystrand and Gamoran's empirical results, controlled for a range of background and initial performance measures, uncovered a strong and statistically significant association between student achievement and the extent of dialogic discourse in the classroom as indicated by (a) proportion of authentic questions, rather than the usual known-answer test questions; (b) extent of uptake, e.g., follow-up questions; and especially (c) time devoted to discussion. The relatively large effect of discussion was particularly striking because there was so little of it, less than a minute a day on average.

What this literature has not addressed is what aspects of classrooms, teachers, students, or which patterns of interaction between teachers and students act to foster dialogic discourse. In this paper, we reanalyzed Nystrand's (1997) data to clarify the conditions under which dialogic discourse emerges within the classroom. Instead of aggregating discourse to the classroom level, we look inside classrooms at each observed lesson, within lessons at each episode[3] of teacher-student exchanges, and within episodes at each question asked by teachers and students and each instance of discussion among teachers and students. This level of detail permits us to examine

classroom discourse as it unfolds dynamically, enabling us to examine whether and why some types of classes are more likely to engage in dialogic patterns of instruction than others. Thus: Does tracking matter? Grade level? Are the dynamics the same in English Language Arts and Social Studies instruction? In classes with more students from high SES backgrounds or with particular social and demographic characteristics? In larger or smaller classes?

Still, the main thrust of our theoretical concerns here moves us conceptually beyond a preoccupation with global classroom characteristics. Thus, we seek to answer several questions about how discourse in classroom instructional settings unfolds over time: What aspects of classroom interaction might shape the dynamics of classroom discourse? Why might certain classes, but not others, shift from monologic to dialogic patterns of discourse? What specific contexts are associated with the emergence of dialogic discourse? How do teachers act to open up dialogic patterns of interaction? Exactly what teacher and student "moves" might allow classroom discourse to step up from monologic to dialogic levels of engagements?

Teacher and Student Roles in Dialogic Classroom Discourse

In Bakhtin's (1981) terms, dialogically organized instruction makes public space for student responses, eliciting and accommodating the differing values, beliefs, and perspectives of the conversants, and ideally including the voices of different classes, races, ages, and genders. Dialogically organized instruction is fueled by such pluralism and heteroglossia; the extent of social interaction clearly shapes both instruction and learning. When classroom interaction is dialogic, the balance of discourse is more symmetrical than in monologic discourse so that the teacher's voice is but one voice among many, albeit a critically important one. Yet repeated empirical findings that monologic discourse is prevalent *across* American classrooms[4] clearly suggest that monologic discourse dominates *within* the classroom. Indeed, the force of monologic discourse within the classroom exerts considerable "inertia," and tends to continue in direction and character unless someone, invariably the teacher, counteracts this force, either directly by doing something, or indirectly by allowing a shift to occur. Because of their unique role in the classroom, teachers play a key role in moving classroom into dialogic modes, and this requires both skill and perseverance.

Getting a true discussion going, it seems to us, is a little like building a fire. With enough kindling of the right sort, accompanied by patience, ignition is possible, though perhaps not on the first or second try. For dialogic ignition, both teachers and students play particular roles:

I. Teacher Moves: Priming the Possibilities for Dialogic Discourse. Much dialogic interaction in classrooms is deliberately structured, especially by authentic teacher questions and instances of uptake. To the extent that these devices prime the possibilities and increase the probability of dialogic interaction, they may be regarded as ways that teachers "scaffold" (Bruner, 1978; Cazden, 1980) discussion. Consider the way a teacher sets up a discussion of *A Midsummer Night's Dream* in a ninth-grade English class in an inner city high school serving primarily Hispanic students (see Christoph & Nystrand, 2001). Here the teacher primes discussion by asking an authentic question, "In your opinion, who is probably the most important person in the play?" (All names in transcripts are self-selected pseudonyms.)

Teacher:	Okay: Alright. Now. Let me just ask you a couple questions about this play.
Devastator:	Go.
Teacher:	*Think* a little bit before you answer. *Who*
Aphrodite:	We already answered that.
Teacher:	in your opinion is probably *the* most important person in the play?
Devastator:	Oberon. And Theseus.
Rose:	Robin.
Aphrodite:	No:
Teacher:	(Waves both hands in arbitration) Wh- Okay, wait. Wait. Okay. Um.
Aphrodite:	Oberon and his wife.
Teacher:	Oberon and, you're (points to Devastator) saying Oberon and Theseus, the two
Devastator:	Main guys.
Teacher:	*male* figures.
Devastator:	Yeah.
Teacher:	Why?
Devastator:	I dunno. 'Cause Oberon's like *leader* of the little fairyland, whatever, and Theseus is the king.
Teacher:	Okay, alright. Makes, makes sense. An:d Aphrodite, you said
Aphrodite:	Oberon and his wife because if it wasn't for them, then none of that would have happened? (I think) Know what I'm saying?
Flaca:	I think,
(Teacher nods and points to Flaca)	
Flaca:	Puck because he put the thing on their eyes.

In many, if not most, American high school literature classes, a question like "Who is the most important person in the play?" would not be authentic because the teacher would be looking for a particular answer. But in this case the teacher had not taught the play before and had not made up her mind about the relative importance of the characters, so she pulled back, fortuitously, as it turned out, opening the floor to a bona fide and vigorous exchange of ideas by her students. In so doing the teacher broke the usual mold of classroom discourse, and her question primed a discussion.

Teachers can act in direct ways to shift classroom discourse from monologic to dialogic patterns with little or no transition, as in the above example, by posing a particularly timely or provocative question. But a shift from monologic to dialogic discourse can also be foreshadowed in indirect ways, for example by the teacher's repeated efforts to elicit student contributions that open the possibility for a shift. We refer to these latter, more indirect efforts as "dialogic bids," which include actively welcoming and soliciting student ideas and observations by following up their responses, and opening the floor to students by asking authentic questions. Teachers may also break the mold by deliberately withholding or skipping their evaluation of students' responses, for example, allowing a student remark to substitute for their evaluation, encouraging students to respond to each other, and thereby encouraging discussion and substantive interaction. All such efforts are bids for dialogicality.

II. Student Moves: Uptake. Recitation patterns can also break down when students take up these bids, not only by freely voicing their own ideas but also by asking questions. In key ways, student questions heighten the dialogic potential of classroom discourse, and they are an important source of dialogic bids.[5] Unlike teachers, students rarely ask test questions, i.e., students almost never ask questions when they already know the answer, but instead typically pose questions eliciting additional information and/or clarifying something the teacher has said. And because their questions follow up something someone else has said, students' questions virtually always involve uptake. Consider the following excerpt of a transcript from a ninth-grade English lesson on Mark Twain's *The Adventures of Huckleberry Finn*, which takes a dialogic turn when a student wonders if Twain was merely being historically accurate, not racist, when he referred to "n------": "Isn't [Twain] being historically accurate when he says 'those n------'?" asks Sam. "So why is it racist?" This question is authentic – Sam doesn't know the answer – and it displays uptake insofar as he asks about what has just been said by someone else.)

Teacher: Can you recall things from *Huck Finn* that, um, seemed racist to you?

Tasha: Miss Watson's, that guy she's always calling 'Miss Watson's n------.'

Teacher: Okay. Jim?

Jim: Well, they sell the slaves. Also, they said in one part, 'fetch in the n-----.'

Teacher: Yeah

Jim: and it's like, you know, it's like you're saying to a dog, 'Here, boy.'

Teacher: Right. 'We fetched in the n------ to have prayers.' Yeah, that's in probably the first couple of pages. Good. Sam?

Sam: Isn't he being historically accurate when he says 'those n------'?

Teacher: Oh, yes, absolutely.

Sam: So why is it racist?

Teacher: Well this, that's kind of what I was trying to bring out on the first day, is that Twain is really just trying to mirror the society, and especially the society of Missouri at the time, but Twain is using the word rather sarcastically. I mean, you're right, he's being historically accurate, but he's also trying to make a point, um, about the different people who are saying things like that. How did that make you guys feel, I mean what was your gut reaction to all that? Linda?

Linda: Ashamed.

Teacher: In what way?

Linda: That the one that it was for wanted to believe that it was something else.

Cassie: Everyone claims it's so historical, you can find that anywhere, 'n-----,' you know, you just hear that and people always think it's so historical.

Teacher: Like, oh, we wouldn't do that anymore.

Cassie: Yeah, like oh, we're not primitive. You know, and it's not, I mean, everybody does that, all the time. Well, not everybody, but people, people do that people can't get in[to] apartment buildings because they're black.

Teacher: Um-hm.

Jim: They can't go to certain stores because they're black, or they're arrested because they're black. You know, it's just, I mean, everybody is always saying how historical it is, and it's right here, and it's right now.

As we can see above, student questions, especially, have the power to enhance the dialogicality of classroom discourse when the teacher, rather than answering the question and quickly getting back to the lesson plan, allows classroom talk to move in directions prompted by the question. As a consequence, we might expect students, as well as the teacher, to play key roles in initiating sequences of dialogic discourse. Clusters of student questions would seem especially to carry dialogic weight, even when interrupted by teacher questions, indicating movement away from recitation and test questions to more substantively interactive dialogic discourse.

III. Ignition: Discussion. Open discussion in which teachers and their students work out understandings face-to-face is the quintessential form of dialogic interaction. The teacher's role is limited mainly to getting and then keeping the ball rolling, leaving it to students to make most of the substantive observations. Discussion tends to be marked by the absence of questions, either by teacher or students, except for clarification. Consider the example of a discussion in a ninth-grade English class in a medium-size Midwestern city about a chapter from Mildred Taylor's *Roll of Thunder, Hear My Cry*. Students are primarily middle class. In this excerpt, John has just read aloud his plot summary for the chapter. The teacher is writing the summary verbatim on the board (for full analysis, see Nystrand, 1997, chapter 1).

Teacher:	I had a lot of trouble getting everything down [on the board], and I think I missed the part about trying to boycott. [She reads from the board] 'and tries to organize a boycott.' Did I get everything down, John, that you said?
John:	What about the guy who didn't really think these kids were a pest?
Teacher:	Yeah, okay, what's his name? Do you remember?
Alicia:	Wasn't it Turner?
Teacher:	Was it Turner?
Several students:	Yes.
Teacher:	Okay, so Mr. Turner resisted white help. Why? Why would he want to keep shopping at that terrible store?
John:	There was only one store to buy from because all the other ones were white.
Teacher:	Well, the Wall Store was white too.
Tom: (addressing John)	Is it Mr. Hollings' store? Is that it?
John:	No. Here's the reason. They don't get paid till the cotton comes in. But throughout the year they still have to buy stuff – food, clothes, seed, and stuff like that. So the owner of the plantation will sign for what they buy at the store so that throughout the year they can still buy stuff on credit.
Teacher:	So, he has to have credit in order to buy things, and this store is the only one that will give it to him.
Felice:	I was just going to say, it was the closest store.
Teacher: (writing on the board):	Okay – it's the closest store; it seems to be in the middle of the area; a lot of sharecroppers who don't get paid cash – they get credit at that store – and it's very hard to get credit at other stores. So it's going to be very hard for her to organize that boycott; she needs to exist on credit. Yeah?

(Discussion continues)

Unlike most classroom interaction, this exchange was not about the transmission and recitation of information; the teacher's role was not mainly that of asking questions to see how much students knew and to go over the points they did not yet understand. This session was about figuring things out – in face-to-face discussion, teacher and students together.

In short, for whole classroom discourse to take the form of discussion, teachers must use dialogic bids as scaffolding and students must become engaged, e.g., by asking questions. Our study examined the sequencing and effect of (a) teacher dialogic bids, (b) student questions, and (c) open discussion.

Data and Methods

Data

Research investigating the dynamics of classroom discourse requires fine-grained data, not only on the nature and type of classroom discourse – the specific interactions between students and teachers – but also on how these interactions unfold over time. In this paper, we focus not just on the particulars of the classroom but also on specific lessons within classrooms, with attention to the microdynamics of interactions between teachers and students within episodes nested within individual lessons. To test our ideas, we draw on unique data that are highly detailed on the number, types, and sequencing of questions posed by teachers and students within a diverse sample of eighth and ninth grade classrooms. These data, gathered by Nystrand and his colleagues, relate student achievement in literature to an extensive list of instructional and classroom discourse variables. At the same time that our analyses examine dynamic aspects of classroom discourse, they also move beyond small-scale studies by examining a large and diverse sample of schools and classrooms in order to identify both the antecedents and the consequences of classroom discourse unfolding in time.

The data for our study consist of class observations of eighth- and ninth-grade English Language Arts and Social Studies classes, with eighth-grade classes observed during 1987-88 and ninth-grade classes during 1988-89. All the ninth-grade English classes were called English, whereas eighth-grade classes were variously called language arts, English, reading,

communications, literature, and so forth. To deal with this issue, we selected the eighth-grade classes that focused most on reading. The eighth-grade classes were located in 16 Midwestern junior high and middle schools. We selected approximately four English classes and four Social Studies classes in each school; in the smaller schools, we observed all the English and Social Studies classes, but in the larger schools, we selected classes that represented the different ability groups as defined by the school (honors or accelerated, regular or average, basic or remedial). This sampling plan yielded 58 eighth-grade English classes and 57 eighth-grade Social Studies classes. The next year we moved to the high schools for which the junior high and middle schools served as feeders, selecting about 6 classes per high school to maintain the same number of classes, again representing the different ability groups as defined by the schools; this resulted in 54 ninth-grade English classes and 49 ninth-grade Social Studies classes.[6] About 1500 students participated each year; of all eligible students, about 10% were lost through absence or refusal. About one third of all students participated in both years of the study. Table 1 summarizes these data.

Table 1. Scope of Study

Characteristics	Grade 8	Grade 9	Totals
Number of English language arts classes	58	54	112
Number of Social Studies classes	57	49	106
Number of times each class observed	4	4	8
Number of observations	460	412	872
Number of coded questions	12,375	21,529	33,904

Each class was visited four times by a trained observer, twice during fall semester and twice during spring semester, with observations scheduled at the mutual convenience of teachers and observers.[7] This yielded 872 class observations. Using CLASS 2.0[8] with audiotape backup, we transcribed all questions posed by teachers or students during instructional episodes occurring within the class observations. We counted as questions all queries for information, including mainly intonation questions and some tag questions, but we did not count either (a) procedural questions (e.g., "How many pages do we need to read?", "Does that answer your question?", "Do you have any questions?"), (b) rhetorical questions, (c) discourse-management questions or repair initiations (e.g., "What?", "Excuse me?", "Did we talk about that?", "Where are we [in the

text]?"), or (d) questions that initiate discourse topics (e.g., "Do you remember our discussion from yesterday?"). Altogether, we transcribed and coded 35,887 questions from 1,152 instructional episodes across the 872 class observations. Missing data reduced the number of questions to 33,904 for analysis. Our transcriptions also let us identify when discussion periods occurred during each lesson. As a result, these data provide an unusually rich source of information, not only on teacher and student characteristics for a particular classroom, but on the types, sorts, and sequences of questions occurring within instructional episodes during specific classroom observations.

Outcomes. We examine three outcomes in our event history analyses: discussion, student questions, and dialogic spells. As noted above, our theoretical arguments lead us to expect that the general classroom conditions leading to open discussion, student questions, and dialogic spells will be similar; nevertheless, these three outcomes differ in important ways. Thus, we expect open discussion to be less structured than dialogic discourse and we expect dialogic spells to occur much less frequently than student questions.

We defined discussion operationally as the free (unprescribed) exchange of information among at least three students and the teacher that lasted at least a half minute during a classroom instructional episode. Student questions were identified similarly using a dummy variable that indicated whether a question was posed by the teacher or by a student. Our definition of a dialogic spell is more complicated and is given below after we review the substantive content provided by the questions in our data. All three outcomes are thus defined at the level of instructional episodes. Our event history analyses focus on the *timing* of these three outcomes within a classroom episode. We define timing in terms of sequence, not chronology, of questions observed within episodes: i.e., units of time were questions, not seconds. Thus, in a classroom lesson, the teacher might pose three questions (interspersed with three student answers), at which point a student might ask a question. For our student question outcome, the relevant "timing" of classroom events thus consists of three teacher questions, followed by the outcome of interest – a student question. The timing of our other outcomes is defined similarly.

School characteristics. Data were collected in eight Midwestern communities, including rural, urban, and suburban sites, in both public and parochial schools. Six of these communities were public school districts; the other two were Catholic high schools with students from a number of urban and suburban K-8 feeder schools. We control for these factors in our event

history analyses. Table 2 provides a breakdown of community and school types that participated in our study.

Table 2. Characteristics of School Sample

	Number of Schools		
School District Type	**Middle Schools (Grade 8)**	**High School (Grade 9)**	**Total**
Parochial	6	2	8
Public	10	7	17
Small town/rural	3	3	6
Suburban	2	1	3
Urban	5	3	8

Evolving classroom discourse. As noted above, these data are unusual in quantitative studies in that they provide a highly detailed source of information on the sequence and flow of discourse within the classroom, as captured by the types and sorts of questions occurring within instructional episodes. We exploit this element of these data by examining the five variables (authenticity, uptake, level of evaluation, cognitive level, and source of the question) for each of the 33,904 questions in our analysis sample. These variables were used in our previous work relating quality of classroom discourse and student achievement in English and Social Studies instruction (Nystrand, 1997).

Authentic questions. We defined an authentic question as one for which the asker has not prespecified an answer. Examples include requests for information as well as open-ended questions with indeterminate answers. As such, an authentic question allows a range of responses, unlike recitation (or test) questions, in which a teacher asks a question with a prescripted answer in mind. This distinction is important for our work because authentic questions posed by the teacher signal to students that the teacher is interested in what they think and know, as opposed to whether they can engage in mere recitation by repeating material given in texts or other sources. Moreover, by allowing an indeterminate number of acceptable answers, authentic questions open the floor to students' ideas. As such, they invite students to contribute something new to the class interaction, which in turn holds the potential for altering the trajectory of discourse in the classroom. By contrast, a test question allows only one possible right answer, a characteristic that Lotman (1988) termed "univocal." As a result, test questions concentrate control of classroom

discourse in one actor – the teacher – and thus allow students no voice or influence over the flow of classroom discourse.

Judging the authenticity of a question ultimately depends on the context of the question; it cannot be determined alone by the text of the question. "What were the causes of the Civil War?" is most likely a test question when part of a review lesson in a high school Social Studies class, but it could very well be an authentic question in a seminar setting. The nature of a given instructional episode, i.e., the genre of classroom discourse, is the most reliable indicator of authenticity. Hence, when teachers begin a lesson by saying, "Okay, class, let's check the answers to your study questions," the questions are invariably test questions (though follow-up discussions of students' answers can sometimes be authentic). By contrast, when teachers ask about students' personal experiences as lead-ins, for example, to open-ended discussions of a poem or short story, these questions are almost always authentic. Whenever the authenticity of a question was unclear or ambiguous to us, we consulted the teacher.

Uptake. We defined uptake as occurring when one conversant, e.g., a teacher, asks someone else, e.g., a student, about something the other person said previously (Collins, 1982). In an example of uptake, taken from a ninth-grade lesson on *The Odyssey*, the teacher asks, "What do they have to do to Polyphemus?" A student replies, "Blind him." The teacher then follows up, asking, "How come the plan is for blinding Cyclops?" This last question is an instance of uptake, since the teacher follows up on the student's response on "blinding him."

Uptake is often marked by the use of pronouns, e.g., "How did *it* work?", "What caused *it*?", "What city grew out of *this*?" In each of these questions, the italicized pronoun refers to a previous answer.[9] Conceptually, uptake is important because it recognizes and envelops the importance of the student contribution. Following up on student responses makes the response the momentary topic of discourse.[10] As such, uptake may play an important role in facilitating the negotiation of understandings, as conversants listen and respond to each other. Moreover, by building on the voices of others and by establishing intertextual links among speakers, uptake acts to promote coherence within the discourse.[11]

Level of evaluation. We coded teachers' evaluation of student responses as high when the student contributed something new (i.e., new information) that changed or modified the topic of discourse in some way, and was acknowledged as such by the teacher. In other words, when a teacher's evaluation is high-level, the student really "gets the floor." Specifically, we

operationalized high-level evaluation using two criteria: (a) the teacher's certification of the response ("Good," "Interesting," etc.) and (b) the teacher's incorporation of the response, usually in the form of either an elaboration (or commentary, e.g., "That's important because . . .") or a follow-up question (e.g., "Can you say more about that?" or "Why do you say that?"). That is, for level of evaluation to be coded as high, the evaluation had to be more than "Good," "Good idea," or a mere repeat of a student's answer. In all instances of high-level evaluation, the teacher validated the student's answer so that it affected the subsequent course of the discussion. For example:

Teacher: Anybody else have a definition of a dictator?
Student: Someone who usurps the rights of others.
Teacher: That's exactly right. How did you learn that? [Certification + follow-up]

In this example, the teacher's evaluation ("That's exactly right. How did you learn that?") is high-level because it validates the student's response and puts it into the play of discussion. In our scheme, we coded the follow-up question ("How did you learn that?") as high-level evaluation and also as a question in its own right. Alternatively, the teacher might have elaborated on the student's point about the usurpation of rights, thus incorporating the student's answer into her evaluation.[12]

We did not consider as high-level a *teacher's* introduction of new information in response to a student answer *unless the teacher incorporated a previous student answer*; the criterion was the importance of the *student* as a source of new information. Also, we applied high-level evaluation only to the evaluation of student answers, not to teachers' answers to student questions.

Cognitive level. Questions that generate generalization, analysis, or speculation open up the cognitive field beyond a mere reporting or replication of another's voice, incorporating the possibility of the speaker's added perspective and particularity. We therefore coded the level of cognitive functioning that each question sought to elicit, judging it high to the extent that the question could "not be answered through the routine application of prior knowledge" (Newmann, 1988; see also Polanyi's [1958] distinction between routine performances and heuristic acts). Like authenticity, the cognitive level of questions cannot be judged altogether from words alone. For example, if the teacher expected students to answer questions by reciting information found in textbooks, we coded questions as reports regardless of their linguistic structure. Hence, though a

why-question will normally elicit an analysis, it will elicit a report if the teacher's focus is the recitation of a textbook's analysis rather than the class's reflection or a student's understanding; then "Why?" really means, "According to your text, why did it happen this way? Do you remember?" In this instance the teacher is seeking only recitation. Factors affecting the cognitive level of any question include:

- *Knowledgeability of the person answering of the question.* The very same question that elicits an analysis from a person who has to figure things out may well elicit a report from another, more knowledgeable individual who already knows and simply needs to explain. For example, "Why did Odysseus and his men plan deliberately to blind Polyphemus?" may well elicit an analysis from students (assuming, of course, that they have to figure out the answer and not merely recite their textbook on the point), but will most likely elicit a report if a student asks a teacher who already knows the answer. When we were unclear, we asked about it after class.
- *Experience, ability, and prior knowledge* of the person answering the question, including student or teacher. If student answers seemed to require routine cognitive operation, we coded questions as eliciting reports. We defined prior knowledge as "prior to the previous night's homework."[13]
- *Nature of the instructional activity.* When an episode was devoted to review, our normal expectation for responses was a report, even if questions had the linguistic form of higher-level questions (e.g., "What's the difference between a symbol and an image?" as a study question).
- *Source of information* required by the question, including prior experience, textbooks, and previous teacher lectures.

Level of cognition elicited by questions was measured with a 5-point linear scale calibrated for level of abstraction and derived from Applebee (1981), Britton et al. (1975), and Moffett (1968). Levels were as follows:

1 = *Record* of an ongoing event: What's happening?[14]

2 = *Recitation and report* of old information: What happened?

3 = *Generalization*: What happens?[15]

4 = *Analysis*: Why does it happen?[16]

5 = *Speculation*: What might happen?

Questions were judged to be lower-order (i.e., eliciting records or reports) if they elicited old information, or higher-order (i.e., eliciting generalizations, analyses, or speculations) if they elicited new information and could not be answered through the routine application of prior knowledge.[17]

Teacher/student locus. This variable indicates whether the question was asked by the teacher or by a student.

METHODS

A key issue is how one might operationalize the start of a dialogic spell, that is, when during an instructional episode we observe a shift from monologic discourse to dialogic discourse. Our analytic strategy was to proceed in several steps. Our initial efforts were exploratory, with two members of our research team reviewing the original audio taped sessions of lessons from selected ninth-grade classes. This work led to tentative identification of active and passive zones of interaction, which were judged by the level of cognitive engagement manifest by the students. Listening more closely, we found that the positive zones of interaction were characterized by the following: (a) the interest and enthusiasm of the students appeared to peak, (b) the discourse was built upon past discourse as conversants often referred to earlier discourse of other speakers, (c) students were asking questions, and (d) teacher's questions were answered without repeated prodding or without being assigned to specific students by name. Although all of these characteristics contributed to our impression of increased student investment in the classroom discourse, the most important and consistent index seemed to be the prominence of student questions. When students began to ask questions about what they were studying, the tide of discourse, as it were, often seemed to change into something more symmetrical than the usual classroom interaction dominated by teacher questions. Applebee, Burroughs, and Stevens (2000) report a similar finding from a twelfth-grade literature class they studied: "Students noted that discussions were most often initiated by students. One student estimated that a student question initiated discussion 'about 60% of the time'" (p. 416). We were impressed that the emergence of student questions, especially when occurring in clusters, not only seemed to signal student engagement but also the teacher's loosening of the "reins of discourse."

To further investigate the relationship between the classroom discourse, as captured by the sequences of questions in our data, and the emergence of dialogic discourse, we constructed a 14-point linear scale based on the five coded variables ranging from 0 for radically monologic (maximally codified) test questions to 14 for radically dialogic (minimally codified) questions

(see Dialogic Value Scale, Figure 1): Questions were weighted for source (teacher vs. student), authenticity, uptake (whether the question references someone else's previous utterance), high-level evaluation, and cognitive level. Based on our review of the audio tapes, our scale privileges student questions; thus, all else being equal, student questions are assigned 1 additional scale value relative to teacher questions. We then proceeded to weight all 33,904 questions in our data set of 1,151 instructional episodes according to this scheme.[18]

To illustrate our coding scheme, we now review some examples drawn from two classrooms in our data. Using the Dialogic Value Scale, a teacher test question such as "On what date was the Bill of Rights ratified?" was weighted 0: The question is a classic test question; it involved no uptake and elicited a student report and a perfunctory teacher evaluation ("Right"). By contrast, the follow-up question, "So why did Mr. Turner resist white help?", was coded positive for authenticity and uptake and displayed a cognitive level of (c) analysis,[19] and hence was given a dialogic value of 3. Figure 2 presents more examples of such codings.

Figure 1. Dialogic Value Scale

Student Questions						Teacher Questions					
Value	**Code**	**Authentic**[1]	**Uptake**	**Evaluation Level**[2]	**Cognitive Level**[2]	**Value**	**Code**	**Authentic**[1]	**Uptake**	**Evaluation Level**[2]	**Cognitive Level**[2]
-1	^	N/A	N/A	N	N/A	-1	^	N/A	N/A	N	N/A
0	0	N	N	L	L	0	0	N	N	L	L
0	0	N	N	H	L	0	0	N	N	H	L
0	0	N	N	L	H	0	0	N	N	L	H
0	0	N	N	H	H	0	0	N	N	H	H
2	A	N	Y	L	L	1	a	N	Y	L	L
2	A	N	Y	H	L	1	a	N	Y	H	L
2	A	N	Y	L	H	1	a	N	Y	L	H
2	A	N	Y	H	H	1	a	N	Y	H	H
4	B	QA	N	L	L	3	b	QA	N	L	L
4	B	QA	N	H	L	3	b	QA	N	H	L
4	B	QA	N	L	H	3	b	QA	N	L	H
4	B	QA	N	H	H	3	b	QA	N	H	H
6	C	QA	Y	L	L	5	c	QA	Y	L	L
6	C	QA	Y	H	L	5	c	QA	Y	H	L
6	C	QA	Y	L	H	5	c	QA	Y	L	H
6	C	QA	Y	H	H	5	c	QA	Y	H	H
8	D	A	N	L	L	7	d	A	N	L	L
8	D	A	N	H	L	7	d	A	N	H	L
8	D	A	N	L	H	7	d	A	N	L	H
8	D	A	N	H	H	7	d	A	N	H	H
10	E	A	Y	L	L	9	e	A	Y	L	L
12	F	A	Y	L	H	11	f	A	Y	H	L
12	F	A	Y	H	L	11	f	A	Y	L	H
14	G	A	Y	H	H	13	g	A	Y	H	H

1. N = Nonauthentic, QA = Quasi-authentic, A = Authentic

2. For both Evaluation Level and Cognitive Level, L = low, H = high: Neither was given any value unless question was authentic with uptake; then they were equally weighted. N = No response.

Figure 2. Examples of Question Weights for Dialogic Value

Questions and Weighted Features	Dialogic Value
"What was the outcome of the 'Great Hostess Twinkie Boycott'?" *teacher question, not authentic, no uptake, cognitive level: report*	0
"What do you think will come of the 'Great Hostess Twinkie Boycott'?" *teacher question, authentic, cognitive level: speculation*	9
"John, what do you think will come of the 'Great Hostess Twinkie Boycott'?" *teacher question, authentic, uptake, cognitive level: speculation*	11
"Well, Mr. _____, then what do you think Ghandi would have done if he had been in the cafeteria with us?" *student question, authentic, uptake, high level of evaluation, cognitive level: speculation*	14

Using data for each episode, we generated an indirect measure of the degree of discourse quality called "dialogic density," figured first as the average dialogic value for all the questions in the episode, and subsequently for the questions in each dialogic and monologic spell within episodes. These two sets of exploratory analyses suggested a rule by which to operationalize shifts from monologic to dialogic discourse; see appendix for specifics on our operationalization. We then proceeded to our event history analyses of this outcome.

Because of the inductive nature of our operationalization, we provide two sets of analyses to assess the validity of our measure of dialogic spells. As a first check, we conducted a simple analysis of variance, in which we computed the mean density for our dialogic density scale within and outside of dialogic spells – that is, during periods of classroom instruction dominated, if our scale and measurement of spells are internally consistent, by monologic or dialogic discourse. As a second check, we contrast results of event history analyses of dialogic shifts with results from parallel analyses of two empirically related, albeit theoretical distinct, outcomes – discussions and student questions.

Event history models. Our main analyses employ event history techniques (Cox & Oakes, 1984; Tuma & Hannan, 1984) to uncover the conditions that lead to the emergence of dialogic spells, discussion, and student questions. Event history analysis is a recently developed quantitative technique for investigating the causes (antecedents) and results (consequences) of

events. Known by a variety of names, it is an important methodology in many disciplines, including:

A) "survival analysis" in *biostatistics* (for the study of demographic changes, especially death);

B) "failure time analysis" in *engineering* (for the study of product failure);

C) "duration analysis" in *economics* (for investigating what leads to unemployment); and

D) "event history analysis" in

- *sociology*: to assess the causes of marriage and divorce (Hannan et al., 1977; Lillard et al., 1995); job mobility (Caroll & Mayer, 1986; Tuma, 1976); infant mortality (Guo & Rodriguez, 1992; Trussell & Hammerslough, 1983); premarital first births (Wu & Martinson, 1993; Wu, 1996); and student attention in classrooms (Felmlee & Eder, 1983)
- *law enforcement*: to assess arrests, convictions, jail sentences, and recidivism (Rossi, Berk & Lenihan, 1980)
- *political science*: to assess changes in city government (Knoke, 1982); political timing (Box-Steffensmeier, Arnold & Zorn, 1997); and the political effects of economic crises (Gasiorowski, 1995)
- *international relations*: to analyze the causes of revolutions, wars, and international conflicts.

In each case, longitudinal data are investigated using multivariate, regression-like methods to specify and estimate the sources of heterogeneity affecting hypothesized changes.

Sociologists studying education often examine continuous outcomes such as years of schooling completed. Statistical methods such as ordinary least squares regression are commonly used to examine the effects of covariates on variation across individuals in such an outcome. By contrast, the outcomes in this paper are binary in nature-whether (and when) a dialogic spell, student question, or discussion spell has occurred in a given classroom episode. If our research had sought merely to determine whether a dialogic spell, student question, or discussion is observed in a given classroom episode, statistical techniques such as logistic or probit regression methods would be appropriate. But as noted above, our analytic focus here concerns not only whether particular outcomes are observed to have emerged within a given classroom episode, but also the *timing* of such episodes. Indeed, our theoretical discussion in some sense privileges the latter issue – *when* dialogic discourse, student questions, or discussion emerges – given our theoretical focus on how discourse unfolds within the classroom.

Our focus on these two aspects – both whether *and* when a binary outcome is observed – requires the extension of more familiar methods such as logistic regression techniques. Consider the analogous issue of human mortality, where the researcher is interested in both whether and

when the event (i.e., death) is observed. In principle, death can occur at any given instant; hence, while the outcome of interest can be represented by a binary variable (for example, 0 representing the status "alive" and 1 representing the status "dead"), the timing of this event will typically be captured by a continuous variable such as age in years, months, days, etc. Similarly for our data, a dialogic spell, student question, or discussion may emerge at any point in a given instructional episode. Thus, in formal terms, the data needed to represent these outcomes consist of two pieces of information, a binary variable indicating whether or not the event of interest has occurred during the period of observation, and a continuous variable either giving the timing of the event or the so-called "censoring" time for cases for which the event has not occurred, where the censoring time records the amount of time elapsed. Thus in the case of human mortality, some individuals will be observed to have died during the period of observation, in which case the event (say, coded as "1") and the age at death will be recorded; for other individuals, death will not yet have occurred, in which case the lack of the event (coded, say, as "0") and age at last observation will be recorded.

In a logistic regression framework, the statistical outcome of interest is the so-called log odds, $\log(p/1\text{-}p)$, giving the natural logarithm of the probability of the event divided by the probability that the event has not occurred. To model human mortality, it is necessary to in effect extend this notion to all possible ages at which death can occur – in effect, an infinite sequence of log odds. The result for mortality is what demographers and statisticians term the age-specific mortality rate – a rate describing the force of mortality at any age t, where age is understood as a continuous variable taking positive values. A typical empirical result in human populations is that the mortality rate is high during infancy, declines through childhood, adolescence, and early adulthood, and rises again during the later adult years. Note, in addition, that the mortality rate can only take nonnegative values – the mortality rate is typically positive, although it could in principle decline to zero at some ages.

In our study, the outcomes are formally similar to mortality in that we are interested in the timing and occurrence of a binary outcome – when and whether a dialogic spell, student question, or discussion occurs in a given classroom episode. Our analyses employ so-called continuous time hazard regression methods, which assume that the underlying time dimension is a continuous quantity. We define key quantities of interest under this assumption. Let T denote the random variable giving the time of the event for a given case and let t denote the range of

times during which the case might be observed. Note then that the period corresponding to $t<T$ reflects times prior to the event of interest, while the period characterized by $t \geq T$ reflects times after the event has occurred.

A key quantity of interest, which forms the outcome to be modeled in a hazard regression, is the so-called hazard rate. It is defined by

$$\lambda(t) = \lim_{\epsilon \downarrow 0} \frac{\Pr(t \leq T < t + \epsilon | T \geq t)}{\epsilon} \qquad (1)$$

where ϵ is taken to be a small positive quantity. The numerator in (1) gives the probability that the event occurs for a given individual during the interval between t and $t + \epsilon$, given that the individual has not yet experienced the event of interest, i.e., that T, the time of the event, is greater than t, the time at which we evaluate the value of $\lambda(t)$. This probability in (1) is divided by ϵ, which is taken to be a positive quantity; hence, a hazard rate refers to a probability per unit time. Because time is assumed to be a continuous quantity, it follows that both t and $\lambda(t)$ can take an infinite number of values. As a result, a necessary aspect of (1) is the limit over ϵ, which allows $\lambda(t)$ to be defined over all possible values of t.

The quantity $\lambda(t)$ functions as the dependent variable in our analyses, in much the same way as the quantity $\log(p/1\text{-}p)$ is the outcome of interest in a logistic regression. As noted above, we operationalize "time" in our analyses by noting where in a sequence of questions a dialogic spell, student question, or discussion emerges. Then under these assumptions, our main analytic object is to identify the antecedents of dialogic spells, student questions, and discussions, examining, for example, how teacher questions are involved in the emergence of these outcomes. To do so, we introduce covariates that capture the role of teacher questions, where the effect of teacher questions is allowed to increase (or decrease) the rate at which a dialogic spell, student question, or discussion emerges. We employ a standard so-called proportional hazard specification to incorporate the effects of our covariates. More formally, let $q=1, \ldots, Q$ index questions within an instructional episode and let λ denote the rate at which dialogic spells, discussion spells, or spells of consecutive student questions are generated. Then a proportional hazard specification specifies the rate at which such spells are generated as:

$$\lambda(q) = \lambda_0(q) \exp(\beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_k x_k) \qquad (2)$$

The model in (2) contains a "baseline" rate, $\lambda_0(t)$, analogous to the mortality rate for a reference group of individuals or to the intercept in a linear or logistic regression model.[20] Because we lack theory on how $\lambda_0(q)$ might vary across an instructional episode, we use a model due to Cox (1972), which makes only weak assumptions about the functional form for the quantity $\lambda_0(q)$, and use Cox's method of partial likelihood (Cox, 1972; Cox & Oakes, 1984) to estimate these models.

The specification in (2) is termed a proportional hazard model because covariates have so-called proportional effects on the hazard rate $\lambda(t)$. To see this, suppose that x_1 is a dummy variable equal to 1 for ninth-grade classes and 0 for eighth-grade classes. Then holding constant all other covariates in the model, $\lambda(t)$ for ninth-grade classes will be given by

$$\lambda_{9th\ grade} = \lambda_0(t)\exp(\beta_1 + \beta_2 x_2 + \ldots)$$

while that for eighth-grade classes will be given by

$$\lambda_{8th\ grade} = \lambda_0(t)\exp(\beta_2 x_2 + \ldots)$$

Note that the ratio of these two terms is given by

$$\frac{\lambda_{9th\ grade}}{\lambda_{8th\ grade}} = \exp(\beta_1)$$

Hence, under this specification, ninth-grade classes will differ from eighth-grade classes by the quantity $\exp(b_1)$. In particular, note negative values of b_1 imply that $\exp(b_1)<1$, while positive values of b_1 imply that $\exp(b_1)>1$; similarly, $b_1=0$ implies that $\exp(b_1)=1$, since the corresponding rates for the two groups are equal.[21]

A particular advantage of these models is that one can investigate covariates that capture any aspect of a classroom's history prior to time t; in particular, covariates need not be static, but may themselves vary with time. We exploit this aspect by employing a number of variables that capture ebbs and flows in classroom discourse. We thus investigated two general categories of covariate effects: (a) **static variables**, related to SES, gender, race, ethnicity, class size, and both teacher and school characteristics, as well as average levels of student achievement within the classroom, and (b) **dynamic variables**, which vary across lessons within our classroom observations.

Static variables: Background factors. We investigated the effects of class and teacher characteristics for two reasons. First, to obtain unbiased estimates of dynamic variables, it is necessary to control for potentially confounding static variables. Second, because structural and compositional variables such as track, SES, gender, race, and ethnicity have been shown globally to affect classroom discourse (Nystrand, 1997; Gamoran & Nystrand, 1991), we sought to explicate the mechanism of these effects as we focused on the unfolding of classroom discourse.

Dynamic variables: Classroom discourse. A fundamental aspect of all discourse is its tendency toward coherence and inertia: Once in motion, discourse tends to maintain both genre and topic unless the speaker or writer somehow signals a shift (Nystrand, 1986). These shifts can range from the explicit (e.g., "Now I'd like to talk about something a little different") to the implicit (e.g., indenting to indicate a new paragraph [cf. Rodgers, 1966]). In classroom discourse, one might well expect that the longer recitation is underway, the more difficult it might be to shift to more dialogic patterns of interaction, and in this study we examined the inertia of classroom discourse in two ways: by measuring the effects of previous discourse on subsequent discourse, and by modeling (via the baseline hazard) the propensity for the outcome to occur as the instructional episode unfolds.

RESULTS

We present our findings in three main sections. First, we explain how we used our data to empirically derive a theoretically grounded method for identifying dialogic shifts and spells in classroom discourse. Second, we present findings on the classroom as a context for discourse. This section examines differences among classrooms in which dialogic spells are more and less likely to occur. Third, we examine the evolving nature of classroom discourse, by measuring key aspects of instructional discourse within classrooms.

PLOTTING QUESTIONS IN TIME

To examine changes in the dialogic value of questions as they unfolded over time in each instructional episode, we plotted their values on our dialogic scale over the course of each instructional episode. Studying these plots revealed clusters of questions forming dialogic and monologic spells and assisted us in identification of shifts from one state to the other. We will consider two contrasting examples.

First, we examine a monologic sequence from our data set with no dialogic spells, consisting only of recitation test questions about the Magna Carta: the year it was signed, the names of the two Houses of Parliament, etc. The teacher begins the review session in preparation for a test as follows:

Teacher: I'll tell you what's going to happen today. . . . You are having a test Monday. I want to spend half an hour today on ummm . . . reviewing and bringing the things together. Then we're going to have the last fifteen minutes. I think you'll find and you work hard on this. I'm going to model some way for you to bring all the information that we have . . . you have listened and you have copied and you have learned the last week and a half. And we are going to . . . categorize it and put it in groups. The rest of it you will have to do over the weekend yourself. Now, I know I said yesterday I'm not going through this packet. But before I start on that, would you get out your packets I asked you to read, and we will fast go through the right answers so you can study from that.

Student: Do you have mine?

Teacher: Yes, I have yours. Let's first do that and then we will go – we will bring the uhhh . . . points together.

Student: Do you have any extras?

Teacher: No I don't I have . . . I don't have anymore . . . I've given them all out. Alright, now you have read this packet, and what you need for uhh Monday is to maybe read through it again. It is about England – the democracy, how it started in England. I did not correct this when I gave it back to you. Individually. What I'd like you to do, is if I give you the right answers, I'll read the questions, give you the right answers. Check if you have it right. If you do not, it's up to you to learn from it. So you read through the thing again, and you find out what the answer is. You have to do that as a practice for Monday. Umm, now you have to tell. Okay, let's do the one on p. 192. In this one was umm . . . by the past in England and the beginning of democracy, Magna Carta. Uhh, 192. It was . . . Uhh, yeah, would you like to do the first question? Or do you have a question?

Student: I want to do the first question.

Teacher: Okay.

Student: Okay. Are you talking about the first question in A or B?

Teacher:	Okay, in the A it says "Finding the main idea." What this reading is about is that the Magna Carta furthered democracy in England. . . . There's only a few years I want you to remember. Now you remember what . . . year Magna Carta was signed?
Student:	I think it was 1022. Okay. (several students talking). Be quiet! (another student humming). Was it 1066?
Teacher:	No! (More humming from male student). When you (wrote it) you said? [pause] 1215! . . . England was the first kind of area that they started to diminish the power of the king. Okay, and it also tell about the Queen! That the Magna Carta limited the power of the (...). And many disputes arose between kings and nobles in England. Many had a war between the Parliament and a war between the Parliament and the king. And four times the King of England tried absolute power. Somebody tell me – what is absolute power?
Student:	I don't know.
Teacher:	Okay, yeah.
Student:	Total power.
Teacher:	Hmmm?? Total power. Okay. Total power. Okay. Number one. Read the question.
Student:	Unlimited power of queens (???) to England's (???). That'd be William the Conqueror.
Teacher:	William the Conqueror is right. Okay. You want to go umm go again? Number 2, yeah. Read the question and then answer.

After this review, which lasts about 17 minutes, the teacher leads students through materials on "Developing an Organizational Chart," taking questions and going over outlines on an overhead projector. The class concludes with a video of "Louis XIV: Man in the Iron Mask." The entire class period was devoted to the transmission and recitation of known information. Figure 3 provides a transcript of questions; Figure 4 sequentially plots the dialogic values of the questions over the course of the lesson. The plot clearly indicates the near absence of dialogic value (density = 0.83), dramatically depicting the plodding character of a lesson without a dialogic pulse geared entirely to review of previously learned information.

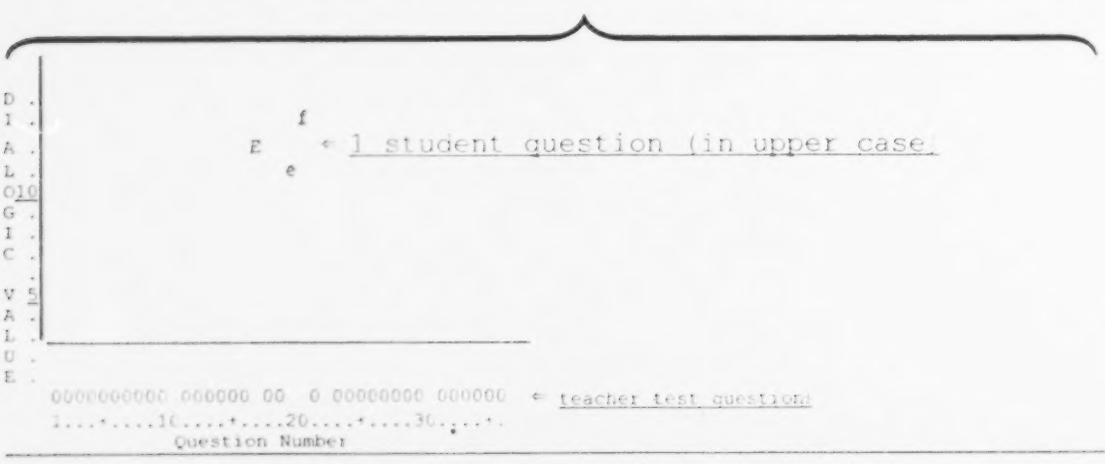
Figure 3. Recitation on Magna Carta: 36 questions in all, 1 from a student (student question in **bold face**)

1 What year was the Magna Carta signed?
2 What year was the Magna Carta signed?
3 What year was the Magna Carta signed?
4 Disputes between kings and nobles – what is absolute power?
5 Unlimited power of kings was brought to England by?
6 The Saxon kings of England were ... [*multiple choices*]?
7 The Saxon kings of England were ... [*multiple choices*]?
8 #3--William the Conqueror ...?
9 The following are true about the Middle Ages?
10 A search warrant may be issued by a judge if...?
11 Rights of English people do not include what?
12 Since late 1600s House of Lords had ...?
13 What is the other house?
14 Who has more power?
15 Where does the prime minister come from?
16 The Magna Carta ...?
17 How did they get the bravery to tell king he couldn't do that?
18 How did they get the bravery to tell king he couldn't do certain things?
19 What is happening when most people in you country don't like what ruler does?
20 Have you ever revolted?
21 What did we have in Milwaukee?
22 Who has more power in the plant?
23 The Bill of Rights – what did it offer?
24 If you can't afford a lawyer here in US, what happens?
25 Differences with king led to what?
26 What is a republic?
27 What is difference between a republic and a monarchy?
28 What happened in 1649?
29 What do you remember about James?
30 James II was...?
31 Power and democracy are good for whom...?
32 #1–Word matching--?
33 #2–Warrant matches...?
34 #3–depose?
35 #4–Republic?
36 #5–Bill of Rights? [divine right?]

Figure 4. Lesson Organized as a Monologic Spell:
Question Plot for Recitation about the Magna Carta.

Questions are noted with codes (here E, e, & f) based on the Dialogic Value Scale laid out in Figure 1; student questions are noted in upper case.

Monologic Spell
Dialogic Density (mean dialogic value of questions) = 0.83



In contrast to this lesson on the Magna Carta, we now examine a dialogic shift in the context of a ninth-grade English lesson on *To Kill a Mockingbird* (Figure 5 shows the plot; the questions are listed in Figure 6). The students have just completed a quiz, and the teacher opens the floor to student reactions and questions. The session clearly distinguishes itself from the review of the Magna Carta in that it is prompted by a student's curiosity. He is quickly joined by several other students, frequently without teacher intervention. The teacher's role is mainly one of directing conversational "traffic," focusing issues, and guiding students through the text to answer their own questions. The exchange quickly evolves into a discussion:

Student:	I really didn't understand this (part). I thought it was Boo at the beginning, but then I was not sure.
Teacher:	There are two knives involved. There's a switchblade and a kitchen knife. Boo has the kitchen knife, right? Wouldn't that make sense?
Student:	Yeah. (Multiple overlapping short comments).
Teacher:	I think. . .
Student:	It said that he doesn't want to reveal it . . . because . . . it would ruin, you know, Boo's life . . .
Student:	Right.
Student:	. . . even if he totally (did it). . . .
Student:	Well he's . . .
Student:	. . . he'd get all this attention and he couldn't obviously . . .
Student:	No. But he does say that (that was) the time (???).
Student:	No, he wouldn't be able to if again if they all found out that he did it.
Teacher:	Why not?
Student:	Well, he's going to have to go to trial, and uhh... all this stuff and everyone will know about that he has . . .
Student:	I think it's worth it. No, it don't mean (necessarily) obstruction of justice, just because they don't want (to die) in front of a house.
Teacher:	So you think that Heck Tate was wrong in covering up.
Student:	Yeah! Well, Heck Tate said that anyway – it's gonna be self-defense anyway, however it comes up on the trial, because you can really argue it that way so you just have to go through the whole trial, and then it would be up to the jury and stuff just to get to some answer that you already know about.
Teacher:	Somebody reconstruct this scene. The kids are walking home in the pitch black. Scout has a ham outfit on.
Student:	Her what?
Teacher:	She has a . . .
Student:	Ham.

Teacher:	. . . her ham outfit on.
Student:	Ham?
Teacher:	Ham, right. Yeah, it's a pageant and she's dressed like a ham.
Students:	(laughing)
Student:	Oh my God! That's some really (???).
Students:	(Laughing)
Teacher:	And she can't see much, because her view is really limited by the ham costume. And it is pitch black, and she can . . .
Student:	(laughing)
Teacher:	. . . feel that they are under the oak tree. And what does . . . what do they hear?
Students:	(multiple overlapping brief answers)
Teacher:	They hear (???) cat swishing, they hear somebody kind of dragging his feet. Somebody's following them. Scout thinks immediately it's Cec . . . Cecil Jacobs playing a trick on them again. What happens next after she calls out Cecil Jacobs has a new (???) on. Can you reconstruct in your mind . . . this is confusing because ham is . . . Ham! (laughter) Scout is stuck there in her ham costume . . .
Students:	(Laughter)
Teacher:	What do you think happens under that big old oak tree?
Student:	Well, umm, like Jem stops to kind of like look in the (???). Scout thinks that Jem's (friends) hit her, but he's really not and then . . . suddenly shows up in (???) and umm then she yells and starts to like run. Then she tries to but she falls. And . . . because she's (in this) big ham, and it's kind of hard to run.
Teacher:	Uhh-huh.
Student:	And umm she falls, but she tries to run away. And then umm –
Student:	(Laughter).
Student:	Yeah. And umm... and she's hear this like... shout (from the tree) . . . And then Jem comes down to her . . . and then she hears a crunch and . . .
Teacher:	Which is what?
Student:	. . .(Jem's hand). . .
Teacher:	Then what?
Student:	And then there's . . . there's nothing. And then suddenly she's being grabbed (that someone's ready to) umm sneak up and run out of there, something like that. And he's pulled away from her umm, and . . . and . . . umm. . . and then really nothing. And then she tries to . . . find where the girl is. But she's (???) with Jem.

After more than 15 minutes of this discussion, the teacher wraps up the discussion by instructing them on their next tasks in small groups where, as in the preceding whole-class discussion, they are to grapple with big issues, figuring out an interpretation of the novel that can form the basis for an essay assignment. The focus of this dialogic exchange, starting with homework reading and extending through discussion and essay writing, is high-level

comprehension. If, in Lotman's (1988, 1990) terms, the emphasis of the monologic lesson on the Magna Carta is "accurate transmission of information," the orientation here is towards the text as a "thinking device."

> Teacher: (Laughing) Who knows, somebody might want (Stephanie's kids). I want to hold those two last questions for Monday because I want to start you in your small groups. Now I'm going to put you in small groups to talk about the big issues that will pull the book together, rather than giving you a test on it. So each group will be responsible for one big question, and I'll ask you to maybe talk about that question in your groups. Put your responses on an overhead transparency, and then explain what you came up with to the rest of us on Monday. This big issue, this topic that you discuss in your small group will be what you write your essay on. So do as well as you can in your groups, because then you'll have more material to go on later (on the) essay.

Our initial explorations suggested that some of the ways teachers seek to kindle dialogic interaction include (a) asking authentic questions, which value and elicit student ideas and not just mastery of information, (b) practicing uptake, in which teachers ask students follow-up questions to pursue points and lines of inquiry introduced by students, and (c) using high-level evaluation to valorize students' responses (cf. Rex, 1999) and allow their ideas and responses to influence the direction of discussion. Also important is the development of long-term 'ethos' (Kachur & Prendergast, 1997; Christoph & Nystrand, 2001): If the majority of lessons are in recitation mode, it is difficult to initiate a discussion. Conversely, where dialogue is more the norm, discussion may erupt despite the teacher's plans. As we note above, discourse has inertia, and the conversants quickly develop expectations about how to comport themselves.

Figure 5. Lesson with Dialogic Spell: Question Plot for Highly Interactive Lesson on *To Kill a Mockingbird*. Questions are noted with letter codes based on the Dialogic Value Scale shown in Figure 1; student questions are noted in upper case.

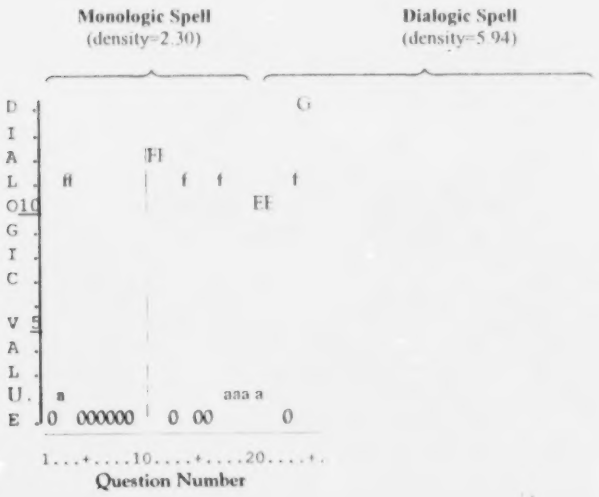


Figure 6. Questions from Highly Interactive Lesson on *To Kill a Mockingbird* with a Dialogic Shift.

26 questions in all, 5 from students (student questions in **bold face**)

1 How does Bob Ewell get killed?
2 How did you figure out that xxx killed him?
3 Why wouldn't it make sense?
4 So you think Heck Tate is wrong?
5 What do they hear?
6 What happens next after she calls Cecil a ... What happens under that big old oak tree?
7 [She hears a crunch] which is what?
8 We can assume that Boo heard what was going on and then did what?
9 Why would he stab him?
10 How do you know he has a knife?
11 Why? [Why does the ham costume save her?]
12 I didn't understand one thing..."What does this say about the relationship of the children?"
13 Who does Atticus think killed Bob Ewell?
14 Trixie, why are you looking so incredulous?
15 Why does Atticus think that Jem killed him?
16 Why doesn't Atticus want to hush up?
17 So he wants to protect Jem's reputation: does that make sense to everybody?
18 What does that say about Atticus' relationship with his children?
19 Do we know that the sheriff knows?
20 How do you know that the sheriff knows?
21 Does that seem to indicate that Heck Tate knows?
22 Who says that now?
23 So what is he referring to?
24 How does that fact that Atticus won't be dishonest say something about his relationship with his children?
25 Why do you say that?
26 What's going to happen to Miss Stephanie and her kids now?

Construct validity. As the lesson on *To Kill a Mockingbird* shows, engaged student questions can be pivotal to the character and course of classroom discourse, especially when the teacher responds by opening the floor to other students' comments and questions. When this happens, classroom discourse is transformed into a dialogic spell. In our study, we define a dialogic spell as a stretch of whole classroom discourse starting with a student question and followed subsequently, though not necessarily immediately, by at least two more student questions as Figure 5 illustrates. The spell is terminated by a series of three or more monologic test questions. The teacher might abort a dialogic spell by low-level evaluating a student response (as right or wrong, for example) and, by so doing, signal a shift back to recitation. To the same effect, the teacher might ignore student comments and questions. Our model postulates that any teacher test question is a monologic bid marking the potential start of a monologic spell in much the way that dialogic bids, including authentic questions, uptake, and student questions increase the probability of a dialogic spell.

To support our construct distinguishing dialogic and monologic spells, we tested their respective dialogic densities in our entire data set using analysis of variance. The mean density inside all dialogic spells was 6.35 inside, and 2.35 outside, a ratio of nearly 3:1, consistent with our expectations. A simple ANOVA yielded a statistically significant difference in mean densities for dialogic and monologic spells ($F = 4,307$; $df = 33,967$). It is also interesting to find that far more questions occurred outside dialogic spells than in: 30,381 questions occurred outside dialogic spells, and 3,588 questions were inside dialogic spells. These results clearly support the case that our construct for a dialogic spell results in distinctions that are inherently meaningful.

The Classroom as a Context for Discourse

Are dialogic spells a common occurrence? Prior research, including previous analyses of our own data, led us to suggest that dialogic discourse is rare, and our new analyses confirm this expectation. In 1,151 instructional episodes that we observed in eighth- and ninth-grade English and Social Studies classes, only 66 episodes (6.69%) had even one dialogic spell. 1,074 episodes (93.31%) involved no dialogic spells, while 7 episodes had two, and 4 episodes had three. How are differences among classrooms related to the occurrence of dialogic spells?

Grade and subject differences. The proportion of episodes with at least one dialogic spell was nearly 50% higher in Social Studies than in English classes; see Table 3. The proportion of dialogic spells per episode was about twice as high in eighth-grade classes as in ninth-grade classes. Table 4 summarizes this finding.

Table 3. Number of dialogic spells per episode by SUBJECT.

	Spells per episode				TOTAL episodes with at least 1 dialogic spell	TOTAL number of episodes	% Dialogic Spells
Subject	0 spells	1 spell	2 spells	3 spells			
Social Studies	520	39	6	4	49	569	8.61%
English	554	27	1	0	28	582	4.81%
TOTAL	1,074	66	7	4	77	1,151	6.69%

Table 4. Number of dialogic spells per episode by GRADE.

Grade	Spells per Episode: 0 spells	1 spell	2 spells	3 spells	TOTAL episodes with at least 1 dialogic spell	TOTAL number of episodes	% Dialogic Spells
Eighth	464	42	4	3	49	513	9.55%
Ninth	610	24	3	1	28	638	4.39%
TOTAL	1,074	66	7	4	77	1,151	6.69%

Dialogic spells and tracking. Although monologic instruction was evident in urban, suburban, and rural public and parochial schools, the most monologic lessons by far were in low-track classes. Indeed, the most striking finding in our study is the virtual absence of dialogic spells in low-track classes: only 2 dialogic spells in the 197 instructional episodes we observed (see Table 5), no doubt a result of emphasis on skill development and test questions about prior reading, both negative predictors of dialogic discourse.

Table 5. Number of dialogic spells per episode by TRACK.

Track	Spells per Episode: 0 spells	1 spell	2 spells	3 spells	TOTAL episodes with at least 1 dialogic spell	TOTAL number of episodes	% Dialogic Spells
Low	195	2	0	0	2	197	1.02%
Regular	425	20	2	2	24	449	5.35%
High	161	12	1	0	13	174	7.47%
Other	293	32	4	2	38	331	11.48%
TOTAL	1,074	66	7	4	77	1,151	6.69%

Dialogic spells vs. discussion. Despite considerable lip service among teachers to "discussion," we found little discussion in any classes in the sense of in-depth exchanges of ideas in the absence of either questions or teacher evaluation. This is most unfortunate given that our previous studies found strong associations between discussion and student achievement (Nystrand, 1997; Nystrand & Gamoran, 1991a). What most teachers in our study called "discussion" was, in the words of one teacher, "question-answer discussion" – i.e., some version of recitation. By any standard, discussion was infrequent, only slightly more frequent than

dialogic spells. In Social Studies, for example, whereas 91.39% of all episodes involved no dialogic spells, 90.33% had no discussion. In English, the figures were similar: 95.15% of all episodes had no dialogic spells, 91.24% had no discussion (see Table 6).

Table 6. Discussion and Dialogic Spells. Descriptive Statistics

Subject	Total number of episodes	Episodes with no dialogic spells	Episodes with no discussion	% episodes with no dialogic spells	% lessons with no discussion
Social Studies	569	520	514	91.39%	90.33%
English	582	554	531	95.19%	91.24%
TOTAL	1,151	1,074	1,045	93.31%	90.79%

On average, discussion in English took 50 seconds per class in eighth grade and less than 15 seconds in grade 9. Average time for discussion in Social Studies was 42 seconds in eighth grade and 31.2 seconds in ninth grade. 20.7 % of eighth-grade English classes spent 1 minute or more on average; only 2 classes of the 58 regularly involved 7 minutes or more. In ninth-grade English classes, only 5.6% had more than a minute daily; only 1 class of the 58 averaged more than 2 minutes. Discussion occupied nearly twice as much time in high-track classes than low.

Table 7. Cross Tabulation of Dialogic Spells and Discussion

		Discussion		
		No	Yes	Total episodes
Dialogic Spells	No	78.92%	6.41%	1,332
	Yes	12.56%	2.11%	229
	Total episodes	1,428	133	1,561

Note: Percentages are computed as a proportion of 1,561 total episodes observed.

To examine the relationship between discussion and dialogic shifts, we cross-tabulated their occurrences in our data set. Looking at the percentages in Table 7, we find that discussion, while rare, is more than three times as likely to occur in episodes in which there are dialogic spells as in episodes in which there are no dialogic spells: 6.41% versus 2.11%. We also find that dialogic spells occurred in 2.11% of the episodes that had discussions, but far more – 12.56% – in the episodes that had no discussions. We reach the same conclusion: Discussion and dialogic spells tend to co-occur, though the overlap is not complete; the results capture distinct, though overlapping, phenomena.

The Evolving Nature of Classroom Discourse

To examine the unfolding of classroom discourse, we used event history techniques to model the emergence of three types of sequences embedded in classroom discourse: dialogic spells, student questions, and discussion. In our event history models, we examined the effects of both fixed attributes of classrooms, teachers, and schools (e.g., class mean SES, teacher experience, school urbanicity) and dynamic elements of classroom discourse (e.g., authentic questions, uptake, high level evaluation, cognitive level of questions). Models that included our dynamic measures of classroom discourse were estimated twice: once with our dynamic measures of classroom discourse specified in terms of the *cumulative number of each type of question prior to that point in time* (e.g., in assessing the rate of the outcome at question *t*, how many authentic questions have occurred prior to this question) and a second time with the dynamic predictors specified as *moving averages* over the five questions prior to this point (e.g., what proportion of the previous five questions were authentic?). Since our theory is unclear on whether the episode as a whole leads up to the events in which we are interested, or whether events reflect only the most recent past, we adopted both approaches in our analyses. The goal of these analyses is to identify the conditions – both static and dynamic – under which dialogic spells, student questions, and discussion are most likely to occur.

What promotes dialogic spells? The first column of Table 8 examines associations between the static attributes of classes, teachers, and schools, and the rate of transitions into a dialogic spell. Dialogic spells are more likely to occur in smaller classes, those of higher average SES, and in Social Studies as opposed to English classes. Consistent with the bivariate descriptive results, dialogic spells are least likely to occur in low-track classes.[22] Unexpectedly, dialogic spells are also less likely in classes with higher average fall writing scores. We scrutinized this association for possible collinearity with tracking, but found that the negative association between average

Table 8. Event history analysis of **transitions into a dialogic spell** using a Cox model with fixed, cumulative time varying covariates, and moving average time varying covariates.

	Model 1: Fixed variables	Model 2: Fixed + cumulative variables	Model 3: Fixed + moving averages
STATIC VARIABLES			
Class Characteristics			
Class SES	1.01***	.52	.56*
	(.27)	(.28)	(.28)
Class size	-.03*	-.03*	-.02
	(.01)	(.01)	(.01)
Grade (1=ninth)	-.20	-.57**	-.30
	(.18)	(.19)	(.20)
subject (1=English)	-.47**	-.51**	-.47**
	(.15)	(.16)	(.15)
Track			
Low track	-.71*	-.68*	-.40
	(.29)	(.29)	(.29)
High track	.38	.31	.24
	(.23)	(.21)	(.21)
Other track	.56*	.16	.08
	(.20)	(.20)	(.21)
% African-American	.85	.12	-.99
	(.94)	(.91)	(1.00)
% Hispanic	.01	-.25	1.01
	(.87)	(.87)	(.87)
% Female	.70	1.71**	.94
	(.52)	(.54)	(.56)
Fall writing score	-.46**	-.40*	-.38*
	(.16)	(.16)	(.17)
Teacher Characteristics			
Gender (1= female)	.10	.20	.34*
	(.15)	(.15)	(.15)
Years teaching	-.01	-.01	.00
	(.01)	(.01)	(.01)
School Characteristics			
Catholic	-.26	-.43	-.06
	(.23)	(.24)	(.24)
Urban	.14	.05	-.01
	(.10)	(.10)	(.10)
Rural	-.25	-.52	-.24
	(.36)	(.35)	(.37)
DYNAMIC VARIABLES			
Authentic questions		.04*	.19
		(.01)	(.13)
Student questions		.54***	5.49***
		(.04)	(.33)
Uptake		.06*	.39
		(.02)	(.26)
High-level evaluation		.08	-.77
		(.10)	(.87)
High cognitive level		.00	.09
		(.02)	(.11)

Note: Standard errors in parentheses. * p<.05 **p<.005 ***p<.0005 (two-tailed test)

fall writing scores and dialogic spells held for all tracks. Thus, dialogic spells occur less often in lower tracks, but within tracks, classes with higher average writing performance exhibit fewer dialogic spells. This may indicate a tradeoff between an emphasis on written and oral performance.

The negative association between low-track classes and dialogic spells is particularly significant in light of earlier analyses of these data, which showed that authentic questions and uptake (two key features of dialogic discourse) were about equally common in high- and low-track classes (Gamoran et al., 1995; Nystrand, 1997). In additional analyses of variances we conducted (results not shown), we find, not surprisingly, that the density of authentic questions and uptake is significantly higher in dialogic spells than in monologic spells. This suggests that although high- and low-track classes have roughly similar *aggregate* distributions of authentic questions and uptake, there are significant differences by track with respect to the *clustering* of such questions within dialogic spells, with authentic questions and uptake tending to be relatively dispersed in low-track classes, and more likely to be structured systematically within dialogic spells in high-track classes.

In the second column of Table 8, we introduce our dynamic measures of instruction into the analysis. Here the dynamic variables are cumulative, so that we are asking whether the cumulative number of authentic questions, student questions, uptake, high-level evaluations, and questions with high cognitive level at any given moment in an instructional episode is associated with the *subsequent* onset of a dialogic spell. Thus, if dialogic spells emerge as a process of dialogic bids by teachers or students, we should find positive associations between cumulative features of previous questions and the subsequent emergence of dialogic discourse. Conversely, if dialogic spells are random with respect to the cumulative features of previous questions, no such associations should appear. The results of this model indicate that our cumulative measures of authentic questions, student questions, and uptake are in indeed associated with the subsequent onset of a dialogic spell. The effect of student questions is particularly noteworthy, with one student question raising the rate of onset of a dialogic spell by 72 percent (71.6 = 100*[1-exp(.54)]) relative to instructional episodes in which no student question is observed (see Table 9). Note, moreover, that these models specify multiplicative (and hence nonlinear) effects of our cumulative measures; hence, our estimates imply, *ceteris paribus*, that the rate of a dialogic spell is 194 percent higher (194.5 = 100 * (1 - exp[2 * .54]) in classroom episodes in which two student questions are observed relative to those in which no such questions are observed.

In the third column, we estimate a similar model except that the dynamic predictors consist of our moving average measures, defined over the previous five questions, instead of cumulatively over the entire episode. Note that our moving average measures can assume only six possible values (0, .2, .4, .6, .8, and 1.0) in contrast with our cumulative measures, which can assume any nonnegative integer value. These differences are reflected in the parameter estimates, which differ by an order of magnitude for our dynamic measures in the last two columns of Table 9.

Two findings in model 3 are particularly salient. First, once again student questions are strongly associated with the onset of dialogic spells, with the occurrence of one student question in the last five questions raising the rate of a dialogic spell by 100 percent (99.8 = 100 * [1 - exp(.2 * 5.49)]) relative to an instructional episode in which no student question is observed in the last five questions. Authentic questions and uptake have positive coefficients but unlike model 2, they are not statistically significant. Second, the coefficient for low track, which was -.71 and -.68 in Models 1 and 2, declines in magnitude to -.40 in Model 3 and is no longer statistically significant. This finding provides an important clue about why dialogic discourse is so rare in low-track classes, suggesting that *clusters* of student questions (i.e., the occurrence of student questions within a five-question sequence), which, according to Model 3, show a large and significant association with the onset of a dialogic spell, are rarely found in low-track classes.

When do students ask questions? If student questions are important for spurring dialogic discourse, what factors might, in turn, lead students to ask questions within a classroom setting? We address this issue in Table 9, which estimates models similar to those of Table 8 but with student questions as the dependent variable. Model 1 yields a similar pattern of findings as in the analogous model in Table 8, including negative coefficients for both low-track classes and average fall writing score. Student questions are also less likely to occur in classes with more experienced teachers, although the effect is small, with each additional year of experience decreasing the rate of student questions by about 1 percent (exp(-.01)=.99).

In model 2, we see that cumulative rates of authentic questions, uptake, and high-level evaluation are all powerfully associated with student questions. Note that the effect for questions of high cognitive level, which was close to zero in Table 8 for dialogic spells, is negative and statistically significant for student questions in Table 9. These findings point to a potential tension within classrooms: While student questions appear to spur the onset of dialogic discourse within instructional settings, "hard" teacher questions, i.e., those posed at high cognitive levels, may pose a barrier to active student participation in classroom discourse (via student questions) by

Table 9. Event history analysis of **transitions into students asking questions**, using a Cox model with fixed, cumulative time varying covariates, and moving average time varying covariates.

	Model 1: Fixed variables	Model 2: Fixed + cumulative variables	Model 3: Fixed + moving averages
STATIC VARIABLES			
Class Characteristics			
Class SES	.54***	.51***	.42***
	(.12)	(.12)	(.12)
Class size	-.02**	-.02**	-.02***
	(.01)	(.01)	(.01)
Grade (1=ninth)	-.02	-.08	-.27**
	(.08)	(.08)	(.08)
Subject (1=English)	-.19**	-.15*	-.13*
	(.06)	(.06)	(.06)
Track			
Low track	-.39**	-.37**	-.22
	(.12)	(.12)	(.12)
High track	.11	.15	.18
	(.10)	(.09)	(.09)
Other track	.32***	.33***	.27**
	(.08)	(.08)	(.08)
%African-American	-.02	.10	.50
	(.40)	(.40)	(.39)
%Hispanic	.46	.39	-.12
	(.36)	(.36)	(.36)
%Female	.22	.10	-.38
	(.23)	(.23)	(.23)
Fall writing score	.21**	.00	.00
	(.07)	(1.00)	(1.00)
Teacher Characteristics			
Gender(1=female)	.06	.04	.04
	(.06)	(.06)	(.06)
Years teaching	-.01*	-.01*	.00
	(.00)	(.00)	(.00)
School Characteristics			
Catholic	-.16	-.20*	-.21*
	(.10)	(.10)	(.10)
Urban	.05	.07	.15**
	(.04)	(.04)	(.05)
Rural	-.16	-.11	.06
	(.15)	(.15)	(.15)
DYNAMIC VARIABLES			
Authentic questions		.03***	.96***
		(.01)	(.04)
Uptake		.05***	1.05***
		(.01)	(.09)
High-level evaluation		.12**	.51*
		(.04)	(.24)
High cognitive level		-.03***	-.37***
		(.01)	(.04)

Note: Standard errors in parentheses * p<.05 **p<.005 ***p<.0005 (two-tailed test)

Table 10. Event history analysis of **transitions into a discussion spell**, using a Cox model with fixed, cumulative time varying covariates, and moving average time varying covariates

	Model 1: Fixed variables	Model 2: Fixed + cumulative variables	Model 3: Fixed variables + moving averages
STATIC VARIABLES			
Class Characteristics			
Class SES	-.18	-.45	-.62
	(.75)	(.78)	(.79)
Class size	-.03	-.04	-.05
	(.03)	(.03)	(.03)
Grade(1=ninth)	.51	.41	-.01
	(.48)	(.51)	(.51)
subject(1=English)	-.25	-.52	-.42
	(.36)	(.38)	(.37)
Track			
Low track	-1.97	-1.99	-2.05
	(1.10)	(1.11)	(1.11)
High track	-.14	-.10	-.08
	(.59)	(.52)	(.53)
Other track	.02	-.09	-.20
	(.50)	(.49)	(.50)
% African-American	1.28	1.64	2.11
	(2.19)	(2.16)	(2.20)
% Hispanic	.01	-.07	-.22
	(2.05)	(2.08)	(2.04)
% Female	1.04	.91	.18
	(1.36)	(1.43)	(1.48)
Fall writing score	.39	.52	.61
	(.45)	(.46)	(.45)
Teacher Characteristics			
Gender(1=female)	.23	.23	.23
	(.36)	(.38)	(.38)
Years teaching	-.01	-.01	-.01
	(.02)	(.02)	(.02)
School Characteristics			
Catholic	.17	.35	.21
	(.57)	(.59)	(.57)
Urban	.32	.30	.37
	(.30)	(.31)	(.31)
Rural	-.50	-.32	-.19
	(1.00)	(1.03)	(1.03)
DYNAMIC VARIABLES			
Authentic questions		.01	.43
		(.02)	(.29)
Student questions		.08	1.38*
		(.05)	(.70)
Uptake		.04	2.02***
		(.03)	(.55)
High-level evaluation		.06	-.37
		(.15)	(2.02)
High cognitive level		.04	.60*
		(.03)	(.24)

Note: Standard errors in parentheses * p<.05 **p<.005 ***p<.0005 (two-tailed test)

reinforcing the voice of the instructor as dominant and authoritative, though just how this might play out in any given case would seem to depend on how the teacher handles student responses.

Model 3 yields similar results for effects on student questions when the predictors are specified as moving averages rather than in a cumulative fashion. As in Table 8, the most notable difference between models 2 and 3 is that the negative coefficient for low track declines in magnitude (from -.37 to -.22) and is not statistically significant in Model 3. This pattern is consistent with our hypothesis that classroom discourse is more responsive to local, as opposed to more aggregate, aspects of the evolving character of classroom discourse, and that these differences may better capture observed differences between classes at low and regular track levels.

What brings on discussion? Finally, we ask what features of classes, teachers, and schools precipitate discussion during classroom instruction. Recall that we employ a rather specific operational definition of discussion – the unprescripted exchange of information among students and the teacher – as opposed to the more common question-answer recitiation. The models portrayed in Table 10 are essentially the same as those in Tables 8 and 9, with our dynamic measures of classroom instruction calculated in terms of the questions that occurred prior to when discussion began, rather than prior to the question that signaled the beginning of a dialogic spell (Table 8) or a question asked by a student (Table 9).

In contrast to the results of Tables 8 and 9, none of the fixed attributes of classes, teachers, or schools in Table 10 is significantly associated with the onset of a discussion spell. The coefficient for low track, which has the largest association with discussion (-1.97), is not statistically significant, probably reflecting the greater variability of discussion within low-track classes as well as the relative difficulty of estimating this effect given that discussion occurs relatively infrequently in instructional settings, let alone those within low-track classes. The results from model 2, which adds cumulative indicators of dynamic variables as additional predictors, yields effects that are generally in the expected direction, but which are not significant coefficients. Only in model 3, which focuses on whether or not a discussion occurs subsequent to each successive set of five questions, do we find significant predictors. Here, as in previous tables, the results imply that discussion is more response to local features of discourse – more likely to occur when immediately preceded by high proportions of student questions, uptake, and questions with high cognitive demands. Cognitive level thus exerts two competing influences on discussion, with a positive direct impact counterbalanced by a negative indirect effect via its negative impact on student questions (see Table 9).

Implications and Discussion

Current understanding of instructional processes and classroom discourse has been shaped, on the one hand, by quantitative studies that have isolated global characteristics of effective classroom discourse and, on the other, by case studies that have provided accounts and analyses of numerous individual lessons. Each kind of research has idiosyncratic limitations. On the one hand, the individual nature of case studies makes it difficult to generalize beyond the individual cases, and with qualitative evidence researchers have been unable to assess the effects of classroom discourse on student achievement. On the other hand, the abstracting and decontextualizing character of statistical studies identifying global characteristics of effective classroom discourse, even when associations with achievement are demonstrated, makes it difficult to understand the structure of the event and to know how to implement the findings. Nevertheless, traditional approaches to the study of schools have, as a result, tended to neglect what is intuitively important about the classroom environment, which is that gifted teachers enliven the learning experience by engaging their students in active inquiry, in contrast to the more typical teaching environment, which is characterized by rote memorization and recitation of instructional materials.

We argue that our findings provide tentative but intriguing clues about what educators might take as factors important to incorporate into their teaching. In our own previous research, for example, we have concluded that teachers will do well to ask their students authentic questions. Yet this kind of advice, sound as it may be, has limitations for teachers who must figure out how to do it. What has been missing is a general understanding of how effective classroom discourse unfolds, how it is initiated, and just what the teacher's role is in shaping it. By applying methods of event history analysis to a rich and extensive data set, we both address these issues and demonstrate the value of time-sensitive quantitative methods for research on both discourse and instruction. Though inherently less nuanced than conversation analysis (CA), event history analysis is well-suited, like CA, to investigating the dynamics of unfolding discourse. Its promise, demonstrated in our study, resides in its power to analyze large numbers of interactions between students and teachers, with systematic attention to such contextual factors as the student backgrounds and dynamic patterning of teacher/student discourse. We have employed these methods to study discourse as an evolving process while assessing the effects of hypothesized variables on this unfolding process.

As an example of what the dynamic analysis revealed that the static analysis obscured, consider the case of instruction in low- track classes. Previously, we reported that authentic questions and uptake occurred with similar frequency in high- and low-track classes. The present study does not contradict that finding, but it shows that the *pattern* of authentic questions, uptake, and other elements of dialogic spells is dramatically less likely to occur *as a sequence* in low-track classes. Moreover student questions, which help precipitate dialogic spells and which are themselves important elements of dialogic spells, occur infrequently in low-track classes. Examination of global characteristics of discourse obscured these crucial findings, since it is the patterning and sequencing of these elements, not their global averages, that appear important to classroom discourse.

These findings are consistent with our prior theoretical conceptualization of classroom instruction, which is that instruction is best thought of not in terms of what teachers do to students, but what teachers and students do together (Nystrand & Gamoran, 1991a). Our findings in this paper reaffirm this perspective. In the past, we showed that rates of off-task behavior were higher and rates of completing assignments were lower in low-track classes, and this was part of the reason for achievement disadvantages of low-track students. This paper complements those findings by showing that rates of student questions are also lower in low-track classes. Yet we are emphatically *not* saying that low-track students are "at fault" for their own disadvantages, nor are we "blaming" teachers for the low achievement of low-track students. Nevertheless, we view these results as breaking new ground by casting teacher and student behaviors, as reflected in the questions they pose, as a dynamic process. Our event history analyses show how the absence of student questions in low-track classes fails to precipitate dialogic spells, and at the same time how the absence of clusters of dialogic questions inhibits the emergence of student questions. In low-track classes, therefore, neither teachers nor students tend to offer dialogic bids, and hence monologic forms of discourse predominate to an even greater degree than in other tracks.

Although classroom discourse is the principal medium of learning in school – Cazden (1988) calls it "the language of learning" – teachers rarely pay attention to how they structure it. Appropriately, they focus mainly on what they are teaching and what their students are learning; at best, awareness of classroom discourse itself is subsidiary. Our findings suggests that this is both unfortunate and understandable since the structure, quality, and flow of classroom discourse are all likely to affect what students learn and how well they learn it. Yet at present, teachers possess little systematic information about these connections, in part because past research has

been inattentive to the role of discourse in learning. Our work addresses this issue in several ways, by modeling the pulse of classroom discourse and assessing the role of authentic questions, student questions, and uptake, for example, in terms of their cumulative and local role in structuring the foundation for dialogic zones of interaction. Student-teacher interaction – indeed even individual teacher questions – have their roots in previous interactions, with current interactions carrying implications for subsequent ones. Understanding how classroom discourse unfolds and their constitutive role in the process, thus, may help teachers gain informed control over how they interact with students and how they might create instruction settings that both engage students and foster learning.

ENDNOTES

1. The dialogic means of seeking truth, according to Bakhtin, is counterposed to *official* monologism, which pretends to *possess a ready-made truth*. Truth, for Bakhtin, is not inside the head of an individual person, but born *between people* collectively searching for truth . . . in the process of their interaction.

2. Mehan's (1979) categories of turntaking in classroom discourse are IRE: teacher *Initiation* (question), student *Response*, and teacher *Evaluation*.

3. We defined an episode as a coherent classroom activity centering around a particular objective or purpose; we treated each class observation as a single lesson. Each lesson typically started with a procedural "getting started" episode and ended with another procedural "end of class" episode, with at least one instructional episode between the two procedural episodes. A new episode was marked when the teacher addressed a new objective. Like the start of a new paragraph, each such shift was usually evident in the teacher's initiation of a new topic. Usually episodes consisted of two or more activities. For example, in addressing a particular objective, a teacher might initiate a question-and-answer session that would then be interrupted by brief periodic lectures and culminate in a homework assignment.

4. We base this claim on Nystrand and Gamoran's finding that 85% of the classes they observed were devoted to some combination of preplanned lecture, recitation, and seatwork (Nystrand, 1997; Nystrand & Gamoran, 1991).

5. Wells (personal communication) notes that a "fairly common type of student bid in the DICEP (Developing Inquiring Communities in Education Project) data takes the form of the student first bidding for a turn and then, when given the floor, giving some information–experience, opinion, conjecture–that s/he thinks is relevant to the topic under discussion. The onus is then on the teacher to respond with uptake and encouragement of further development of the student's sub-topic." For more on DICEP, see HTTP://WEBCAT.LIBRARY.WISC.EDU:8000/WEBZ/HTML/HOMEFRAME.HTML:SESSIONID=0?STYLE=RSS:NEXT=HTML/HOMEFRAME.HTML:BAD=HTML/HOMEFRAME.HTML.

6. One school did not offer Social Studies classes for ninth-graders.

7. For various reasons, five eighth-grade classes were observed only three times.

8. CLASS 2.0 and CLASS-EDIT 2.0 and the accompanying documentation are available from the lead author to anyone wishing to use it. The documentation elaborates all coding rules. Write Martin Nystrand, University of Wisconsin-Madison, Wisconsin Center for Education Research, 1025 West Johnson Street, Madison, WI 53706; email NYSTRAND@SSC.WISC.EDU.

9. Linguists call such references *deictic* references.

10. To qualify as uptake, a question must incorporate a previous answer, not a previous question; hence, we did not code as uptake teachers making reference to questions or remarks they had previously made or to filmstrips, videos, or texts that had previously been discussed. Nor did we code repeated questions as uptake.

11. In a study of twelfth graders discussing and writing about literature, Knoeller (1993) refers to this process as "interpersonal voicing," when a speaker frames, expands, or borrows the voice of others in the immediate classroom.

    Other researchers have treated uptake more liberally. Greenleaf and Freedman (1993), for example, treat the teacher's revision of student responses (perhaps beyond recognition) in furthering the "lesson" as uptake. We are aware that our specific notions of uptake could be subject to coding error if explicit referencing to the past speaker were used systematically as a common tool or "technique" to involve students, since "ritual validation nullifies itself" (van Lier, 1997).

12. Even though high-level evaluation incorporates a student's answer into the teacher's follow up, we did not code such evaluation for uptake; in our system we used uptake to code only questions.

13. If a teacher asked students about the previous night's reading, we coded the source of information as the text, whereas if the teacher asked about something learned previously to that, even from a text, we coded the source of information as prior knowledge. We made no distinction between prior knowledge and personal knowledge.

14. We coded questions as records if they elicited descriptions of what students were observing, feeling, or thinking at the time of the question. Examples include: "Any questions on that?" and "What [or why] are you thinking about that?"

15. If the question required students to think and not just report something already known or previously thought by someone else, then we scored cognitive level higher than 2. To determine how high involved judging whether the student answering the questions was building up a generalization, in which case we scored it a 3, or breaking down an argument, in which case we coded it as an analysis and rated its cognitive level as 4.

    Generalizations display inductive reasoning, building up ideas rather than breaking them down. They address questions such as: What happens? What do I make of what happens? They tie things together, and they are not restatements of information.

16. Analyses display deductive reasoning, breaking concepts, ideas, and arguments down rather than building up ideas. To be scored as analyses, questions had to require more than restatements of known information.

17. Superficially a question such as "Do you think that's important?" might seem to elicit a record (i.e., referring to what the student is thinking at the time of the question), but the question more typically elicits a higher-cognitive operation such as an analysis of what is important. Hence, for such preformulated questions (cf. French & MacClure, 1981), we distinguished the preformulators ("Do

you think . . . ") from their nuclear utterances (the remainder of the question: "Is that important?"), coding only the latter.

18. Programming was provided by James Fehrenbacher.

19. For more on the context of this question and rationale for these codings, see Nystrand, 1997, pp. 1-2f.

20. Recall that the intercept in a linear or logistic regression refers to the group of individuals for whom all values of the covariates are zero–for example, white males born between 1940 and 1944 with 12 years of schooling completed. This is true as well for the baseline hazard rate, $_{0(0)}$, except that this quantity is permitted to vary with time–for example, the age-specific mortality rate for white males born between 1940 and 1945 with 12 years of schooling completed.

21. To see this concretely, suppose that the outcome is the rate for the transition to a dialogic spell and that b1 has a positive effect estimated as 0.2. Then $b_1 = 0.2$ corresponds to exp(0.2)=1.22, which translated into words states that the rate of dialogic spells is 22 percent *higher* in ninth-grade classes than in eighth-grade classes, where 22 percent = 100 percent x [exp(0.2)-1]. Conversely, suppose that b_1 has a negative effect estimated as -0.2. Then $b_1 = -0.2$ corresponds to exp(-0.2)=0.82, which translated into words states that the rate of dialogic spells is 18 percent lower in ninth-grade classes than in eighth-grade classes, where -18 percent = 100 percent x [exp(-0.2)-1].

22. Dialogic spells are also more likely to occur in "other" tracks than in regular tracks (the omitted category). Although it is tempting to ascribe the effect of "other" track levels to heterogeneity of students in such classes, unfortunately this category reflects a mixed bag of classes that included mixed-ability classes, school-within-school classes, and classes in smaller schools (which were more likely to be mixed for their schools but relatively homogeneous compared to the sample as a whole), so it is difficult to feel confident in such an interpretation.

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APPENDIX: MODEL FOR DIALOGIC SHIFTS

Default:

- Teacher manages, initiates discourse; most common, default pattern of classroom discourse is monologic.
- Discourse manifests inertia and tends to continue direction and character until someone, usually the teacher, acts to change it.
- To transform monologic classroom discourse into dialogic, teacher either does something or allows something; these are called dialogic bids.

Elements of Dialogic Bids:

- Responding to and taking up ideas and observations that students introduce:
  - Uptake
  - Authentic questions
- Withholding evaluation in such a way as to encourage discussion, conversational interaction.

Model:

- Dialogic bids & termination of monologic series (3 questions each having a value < 1)
- Dialogic shift
  - Commences with student question and followed by at least 2 more, though not necessarily uninterrupted by teacher questions
  - Uninterrupted by monologic series (3 questions each having a value < 1)
  - Shift is terminated by sustained monologic series (3 or more questions each having a value < 1)

Elements of Monologic Bids:

- Asking normal teacher questions (value <1; recitative: report-level test questions with no uptake; low level evaluation)
- Interrupting instructional conversations with evaluation; ignoring student comments and questions

Please help us assess the quality of our research report series by completing and returning the questionnaire below:

NAME OF REPORT: **QUESTIONS IN TIME: INVESTIGATING THE STRUCTURE AND DYNAMICS OF UNFOLDING CLASSROOM DISCOURSE**

1. Your position:

____ elementary school teacher	___ state ed. agency staff	___ policy maker
____ middle school teacher	___ professional developer	___ researcher
____ high school teacher	___ school administrator	___ education writer
____ college teacher/professor	___ district administrator	other_____

2. Clarity

	Very well				Not at all	
a. The concepts in this report were clearly expressed.	1	2	3	4	5	N/A
b. This report was well organized.	1	2	3	4	5	N/A

3. Utility

a. Reading this report gave me new information or insight into teaching or learning.	1	2	3	4	5	N/A
b. This report addresses a current and important problem in education,	1	2	3	4	5	N/A
. . . and offers a solution to the problem.	1	2	3	4	5	N/A
. . . and/or helps the reader understand the problem from a different perspective.	1	2	3	4	5	N/A
c. I found the ideas and solutions offered in this report to be feasible given current realities of policy and practice.	1	2	3	4	5	N/A

4. Scholarship

a. The conclusions drawn in the report are						
. . . adequately supported by the research presented.	1	2	3	4	5	N/A
. . . fully grounded in theory.	1	2	3	4	5	N/A

5. Any other comments or suggestions regarding this report or additional research needs in the area of English and language arts teaching and learning are greatly appreciated.

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Please return this form to:

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